

Two Sections—Section One

JULY 27, 1929

# Railway Age

FOUNDED IN 1856



an economic force  
pitted against waste  
*—wherever wheels and shafts turn*

A basic idea thirty years ago, "Timken Bearing Equipped" is today an economic force pitted against waste . . . typifying a huge replacement program which sweeps all before it.

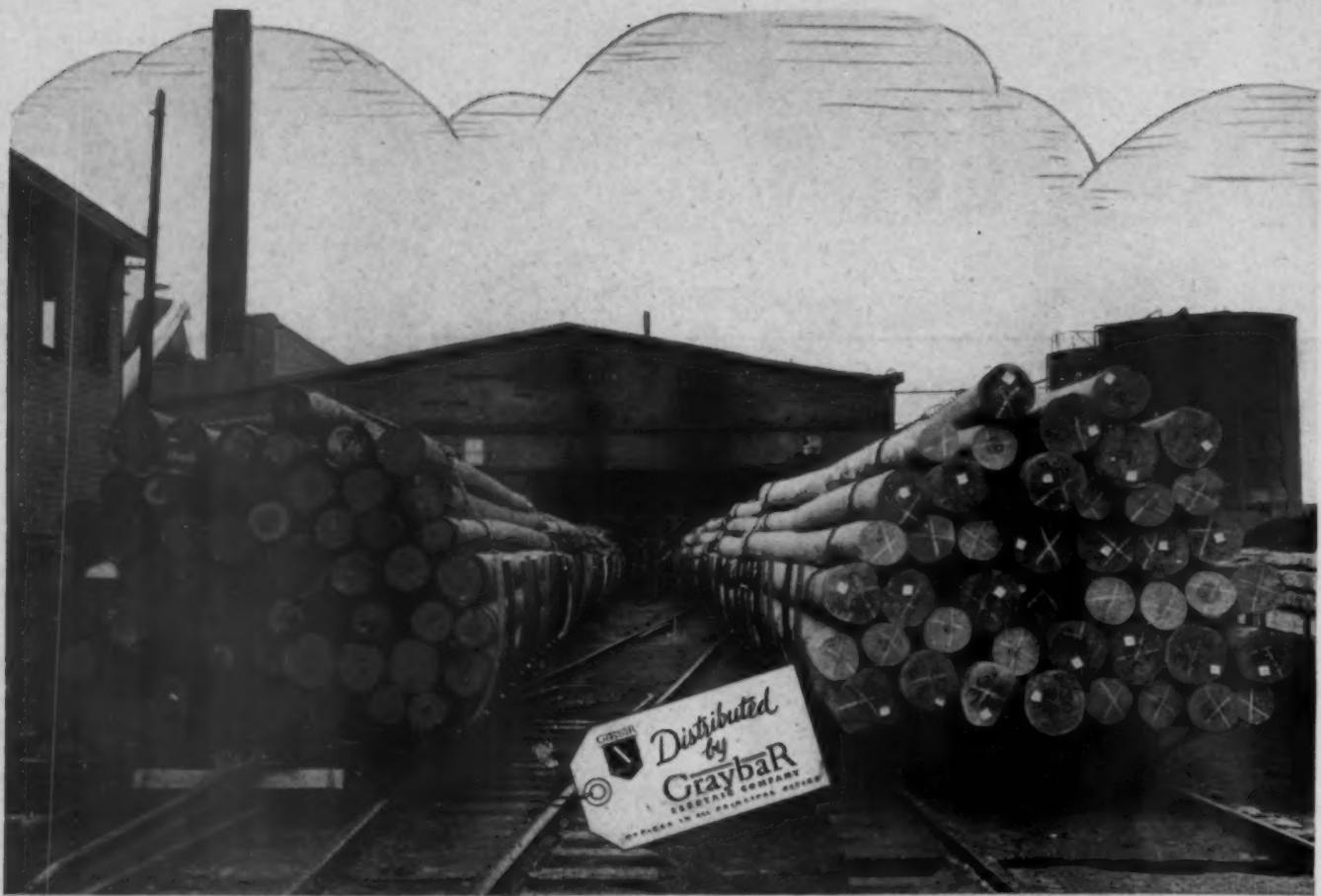
As in all industry, railroad operators find in Timken a *bearing that does all things well* . . . whether the loads are all radial . . . all thrust . . . or a combination of both.

Rolling stock, inspection cars, section cars, gas-electric coaches, turn-tables, car retarders—all have yielded to the tremendous power and lubrication savings, maintenance elimination and endurance made possible only by the exclusive combination of Timken tapered construction, Timken *POSITIVELY ALIGNED ROLLS* and Timken steel.

"Timken-Equipped" represents the difference between waste and conservation, between antiquated and modern—a deciding factor in building and buying mechanical equipment—wherever wheels and shafts turn.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

**TIMKEN** *Tapered Roller* **BEARINGS**



Long life of poles is assured, under *International* methods, because sound timber only is subjected to preservative treatment—a treatment which is under strict scientific supervision and control; a treatment which results in a deep and uniform impregnation by the highest grade of creosote oil. There is no gamble. The element of chance has been removed.



*International poles have been in service for over thirty years.*

*Long Life assures economies.*

**International Creosoting & Construction Company**  
General Office: Galveston, Texas

# ***International*** **Creosoted Yellow Pine Poles**

Published weekly by Simmons-Boardman Publishing Company, 34 North Crystal Street, East Stroudsburg, Pa. Entered as second class matter, March 9, 1928, at the Post Office at East Stroudsburg, Pa., under the act of March 3, 1879. Address communications to 30 Church St., New York City.



Published every Saturday by the Simmons-Boardman Publishing Company, 34 North Crystal Street, East Stroudsburg, Pa., with executive offices at 30 Church Street, New York.

All communications should be addressed to the New York Office, 30 Church Street

EDWARD A. SIMMONS, *President*  
LUCIUS B. SHERMAN, *Vice-Pres.*  
HENRY LEE, *Vice-Pres.*  
SAMUEL O. DUNN, *Vice-Pres.*  
CECIL R. MILLS, *Vice-Pres.*  
FREDERICK H. THOMPSON, *Vice-Pres.*  
ROY V. WRIGHT, *Sec'y*  
JOHN T. DEMOTT, *Treas.*

CHICAGO:  
105 West Adams St.  
WASHINGTON:  
17th and H Streets, N. W.  
CLEVELAND:  
Terminal Tower  
SAN FRANCISCO:  
215 Market St.

#### Editorial Staff

SAMUEL O. DUNN, *Editor*  
ROY V. WRIGHT, *Managing Editor*  
ELMER T. HOWSON, *Western Editor*  
H. F. LANE, *Washington Editor*

B. B. ADAMS  
C. B. PECK  
W. S. LACHER  
ALFRED G. OEHLER  
F. W. KRAEGER  
E. L. WOODWARD  
J. G. LYNE  
J. H. DUNN  
D. A. STEEL  
R. C. AUGUR  
R. A. DOSTER  
JOHN C. EMERY  
MARION B. RICHARDSON  
L. R. GURLEY  
H. C. WILCOX  
R. S. KENRICK  
NEAL D. HOWARD  
F. M. PATTERSON  
RICHARD W. BECKMAN  
LLOYD GEORGE  
CHARLES LAYNG  
GEORGE E. BOYD  
WALTER J. TAFT  
M. L. LEATH

The *Railway Age* is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)

Subscriptions including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free; United States, Mexico and Canada, \$6.00. Foreign countries, not including daily editions \$8.00.

Subscriptions for the fourth issue each month only (published in two sections, the second of which is the Motor Transport Section) payable in advance and postage free; United States, Mexico and Canada, \$1.00; foreign countries, \$2.00. Single copies, 25 cents each.

# Railway Age

With which are incorporated the *Railway Review*, the *Railroad Gazette* and the *Railway Age-Gazette*. Name Registered U. S. Patent Office.

Vol. 87

July 27, 1929

No. 4

## In this Issue

### New York Central Plans Extensive Improvements on West Side in New York ..... Page 234

A description of this \$175,000,000 project on Manhattan Island which involves electrification, grade separation, commercial development and elevated express highway over tracks of 12-mile freight line.

### St. Lawrence Waterway Construction Found Not Justified 241

An outline of the Institute of Economics and Brookings Institution study which finds no economic basis for this project.

### Rock Island Tests Powerful Rail Motor Cars ..... 251

A description of the three new 800-hp. dual-power-plant, distillate-burning, gas-electric motor cars recently placed in service by this road.

#### EDITORIALS

Ashburn Evades the Issues .....	231
Vouchers .....	232
Coaxing the Motorist Back to the Train .....	232
Safety and Efficiency .....	232
Railroad Efficiency .....	232
"I Don't Know Much About Railroading" .....	233
Securing Suggestions from Employees .....	233
Indexes to Volume 86 .....	233

#### GENERAL ARTICLES

New York Central Plans Extensive Improvements on West Side in New York .....	234
Commission to Consider Consolidation in the Fall .....	240
St. Lawrence Waterway Construction Found Not Justified .....	241
Car Service Division Reports on Conditions .....	246
Transportation of Private Cars Must Be Paid For .....	247
I. C. C. To Investigate Reciprocity Buying .....	250
Rock Island Tests Powerful Rail Motor Cars .....	251
Freight Car Loading .....	254
Engineers Hear Divergent Views on Inland Waterways .....	255
Rebuilding a Railroad's Operating Methods, Part I .....	259
Hearing on Proposed B. & O. Acquisition of B. R. & P. ....	262

#### COMMUNICATIONS AND BOOKS ..... 263

#### LOOKING BACKWARD ..... 264

#### ODDS AND ENDS OF RAILROADING ..... 265

#### NEWS OF THE WEEK ..... 266

The *Railway Age* is indexed by the *Industrial Arts Index* and also by the *Engineering Index Service*

# BOHNALITE

## 62%

### Lighter than Iron

Production managers, factory managers, general managers, will find in Bohnalite the key to the solution of the problem of keeping weight in their product at the absolute minimum.

For Bohnalite is a new alloy 62% lighter than iron and rapidly taking the place of iron in many lines of manufacture.

Possessing every valuable property of iron, Bohnalite has many superiorities of its own, including high uniform hardness—great density—fine grained structure—tremendous strength—excellent bearing qualities—ductility and lightness.

We would like to go into detail with your engineers on the marked advantages of Bohnalite.

Send us your blue prints and samples and let us show you how Bohnalite will increase the efficiency of your product. Ask for the new Bohnalite booklet.

BOHN ALUMINUM & BRASS CORP., DETROIT, MICH.  
New York    Chicago    Philadelphia    Cleveland    Pittsburgh





# Railway Age

Vol. 87, No. 4

July 27, 1929

Table of Contents Appears on  
Page 5 of Advertising Section

## Ashburn Evades the Issue

GENERAL T. Q. ASHBURN made a remarkable statement in an address on July 10 at the meeting of the American Society of Civil Engineers at Milwaukee, Wis. General Ashburn is chairman of the Inland Waterways Corporation, which operates the barge line on the Mississippi river system, and all the stock of which is owned by the federal government. The waterways also are owned by the government. All past improvements to render them navigable have been made at the expense of the taxpayers, and all future improvements will be made at their expense. General Ashburn is familiar with these facts, and yet he said: "Since no charges are made for the utilization of any of our waterway avenues, the practical operator is not concerned with their cost of construction, nor is he inclined to view with alarm any enormous expenditures made so long as they have been made and so long as all the avenues are open to him without cost. He accepts the situation as it is and leaves to economists, statisticians and college professors the academic question of whether the Congress was right or wrong in spending money for such purposes."

If no more expenditures upon inland waterways were contemplated, the position taken by General Ashburn might be reasonable. Once a canal has been dug or the channel of a river improved such use of it as may be practicable should perhaps be made, whether such use does or does not show that the expenditure upon it was justifiable. But General Ashburn ignored the most important question relating to inland waterways that is before the American public. This is, as to whether in future large expenditures should be made by the government for further development of waterways. How should that question be determined? It is claimed that extensive additional development of waterways will reduce the cost of transportation. Is it meant by this claim that the total cost of transportation—including both what the taxpayers and what the shippers pay—will be reduced, or merely that the freight rates on the improved waterways will be less than they will be on the railways? General Ashburn is not merely the operating head of the barge line. He is a government officer, and as such owes a duty to the public. It is clearly his duty to the public not to mislead it by making statements which may easily be construed to mean something which he might deny that he meant. Careless readers would almost certainly infer from his statements that, in his opinion, any investment in waterways that may be made in future, as well as that already made, either is not a factor in the cost of transportation or is one that need not be considered. Every economist of standing who ever said anything upon the subject concedes that it is a factor that should be considered. General Ashburn's caustic fling at "economists, statisticians and college professors" seems plainly intended to discredit the views of those who have taken the position that the true total cost of

inland waterway transportation includes the interest and maintenance costs paid by the public in taxes, as well as the freight rates paid, and that any waterway upon which this total cost will not be less than by rail should not be developed.

The extensive further development of inland waterways is being advocated by numerous officials of the government, as well as by members of Congress. In fact, most of its advocates, and its most effective advocates, are government officials. Their plans include extension of the operation of the government-owned barge line. The views expressed by them carry unusual weight with the public because the public naturally assumes that they are working and speaking solely in its interest. Some of these public officials make especial efforts to discredit all criticism of their program by stigmatizing such criticism as "railroad propaganda." In explanation of the action of the government in establishing the barge line of which he is the head, General Ashburn said, in his address at Milwaukee, "Railroad opposition had been successful in practically annihilating common carriers on our streams and lakes." He is quoted in an interview in the Jacksonville (Fla.) Journal of June 25, as having said: "The Inland Waterways Corporation has been propagandized against more during the last year than at any other time in its history. The mere fact that such propaganda has been in existence proves that the corporation is becoming so successful that the railroads are afraid it will do what it has set out to do—give the people of the United States, through co-operative rail and water transportation, a cheaper form of transportation than any other existing."

When the government engages in business in direct competition with business concerns in which private capital is invested, and government officials, in public addresses and interviews, not only advocate and defend its policy, but attempt by innuendo to discredit opposition to it it becomes high time that these government officials should be called upon to state fully and frankly what they understand the government's policy is, what they believe it ought to be and why they so believe. Does General Ashburn believe that it is or should be the government's policy to develop waterways, regardless of the cost to the taxpayers, provided the result will be to reduce freight rates? Or does he believe that the interest and maintenance charges paid by the public, as well as the freight rates paid, should be included in considering the cost of water transportation? Does he believe, if taxes as well as freight rates are included, that the cost of inland water transportation will be less than the cost of rail transportation? If he does so believe, why does he not say so and cite the evidence upon which he bases his belief?

As long as General Ashburn continues to make public addresses and statements in which he not only evades the

discussion of questions such as these, but deliberately tries, by sarcasm and innuendo, to discredit those who do, he will be under the suspicion of fearing to meet squarely the principal issues raised by the proposed development of waterways, and of not being influenced solely by a desire to promote the public welfare.

## Vouchers

A RAILWAY president who has had marked success in the operation of his line said the other day: "When I first came on the job, I spent all my time checking, approving and signing vouchers. Then it occurred to me that this was a waste of time. We contracted with the firms to whom the money was to be paid for supplying certain equipment or doing certain jobs. Unless we wanted to go to jail, there was no way of getting out of paying the money. Of course, vouchers should be checked for accuracy, but that is a job for an accountant. Accordingly, our executives no longer burden themselves with vouchers. We owe the money and, if the amount is right, we pay it, without routing the voucher and its attendant file over the desks of half a dozen busy executives. The time thus saved is spent by these officers in investigating proposals for expenditures. We find it far more efficient to do our checking before the money is spent, rather than afterwards. The result has been that we spend less money, and get better results from the money we do spend."

These remarks, backed up by unusually good results, must be taken seriously. The desks of the officers of this railway have a rather strange appearance without the huge piles of voucher files that one becomes accustomed to seeing on many executives desks. Instead of wading laboriously through the mass, they are engaged in constructive, live work, leaving the vouchers to the accountants who after all, can handle them adequately.

## Coaxing the Motorist Back to the Train

THE very factor which has caused the railways to lose so much of their passenger traffic—the popularity of motoring—sooner or later may have the effect of putting many travelers back on the trains. Traffic congestion, particularly on holidays, is making motoring into the country from large centers of population anything but a pleasure. Highway construction is continuing, of course, but it is far from keeping pace with increased automobile production, with the result that present highway facilities around large cities are greatly overtaxed on Sundays and holidays, and motoring has become not only tedious and uncomfortable, but even dangerous.

One inter-city electric railway system, centering in Chicago, the Insull lines, is making a strong effort to capitalize highway congestion in an advertising campaign which has been running all summer in Chicago newspapers. By means of cleverly-devised drawings and well-written advertising copy it depicts the speed, comfort and safety of railway travel in contrast with the conditions of travel on choked highways. The Insull lines, which extend from Chicago to many nearby vacation resorts, are urging Chicagoans in these advertisements to use the conveniently-scheduled electric trains in

going to and from these resorts, making 70 miles an hour instead of the slow time which a motorist can average under the existing conditions of extreme highway congestion.

The Insull lines are not the first to take advantage of congestion on the highways to induce travelers to leave their cars at home and journey by train. Several steam railways have exhibited the same resourcefulness. But it is a good idea and worthy of a trial by other railways. The travel habit is taking a firmer hold in this country. The railways should lose no opportunity to exert the strongest selling effort to the end that they, along with other agencies of transportation, may benefit from this increase in traveling.

## Safety and Efficiency

IN railway shop operation, safety and efficiency are more than closely allied. The indifferent, "don't care" attitude, which constitutes fertile soil for industrial hazards, also proves one of the most important contributing factors in limited shop production. By the same token, shop men who are interested and on the alert to correct accident-breeding conditions usually can be depended upon to correct other conditions which cause waste of time and labor. Railroad managements have not always appreciated the importance of safety and accident reduction efforts from this standpoint. In the few years since the general subject of safety has been stressed on individual railroads under the leadership of the Safety Section of the American Railway Association, many enviable safety records have been established.

One road reports that its car department force of approximately five hundred men has worked 21 months without a reportable accident, and, while this may not be a record, it is unquestionably a most satisfactory performance, impossible of attainment until safety thoughts and actions have thoroughly permeated the rank and file of the shop forces. As pointed out at the last meeting of the Safety Section, mechanical deficiencies and unsafe conditions must be cleaned up, but the desired results can not be obtained until local supervisors individually and collectively feel the responsibility for safe operation and transmit their own enthusiasm and desire for safety to the shop forces who, with the railroad, are benefited thereby.

## Railroad Efficiency

PRACTICALLY every previous high record of operating efficiency ever made by the railways in the early part of any year has been exceeded by them this year. In the first four months of this year freight cars traveled an average of 31½ miles a day. The previous high record was 29.8 miles, made in 1927. On the average, each freight car rendered 529 ton-miles of freight service daily. The previous high record of 515 ton-miles was made in 1927. Freight trains, for the first time in the first four months of any year, moved an average of 13 miles an hour. Locomotives traveled an average of 64 miles a day, as compared with the previous best record of 61 miles. Fuel consumption was only 135 pounds per 1,000 gross ton-miles. The comparable fuel consumption in 1928 was 137 pounds; in 1927, 141 pounds, and in 1926, 150 pounds.

The average freight train contained 47.2 cars, as com-



pared with 46.8 cars in the corresponding part of last year. The average number of tons of freight carried in each train was 775, as compared with 765, the previous high record, which was made in the corresponding part of 1927. The railways are earning a larger average percentage of net return upon their property investment than in any year since 1916. Their passenger business is the smallest for many years.

The average wage being paid by them is higher than in any other year excepting 1920, and their taxes are the largest in history. The comparative prosperity they are enjoying is due entirely to the record-breaking efficiency with which they are being operated.

## "I Don't Know Much About Railroading"

SOME time ago the Executive Committee of the Railroad Division, American Society of Mechanical Engineers, announced as one of its functions the holding of joint sessions with other engineering societies. It was explained at that time that, owing to the fact that the railroad industry was a large user of manufactured materials and equipment, the division could perform a useful function in presenting the railroad operating and maintenance problems for discussion by engineers from both the manufacturing and transportation fields. The wisdom of this decision was undoubtedly justified at a joint meeting of the American Society of Refrigerating Engineers and the Railroad Division, which was held at State College, Pa., June 21. Two joint sessions were held, one in the morning and the other in the afternoon, during which six papers were presented and discussed. The morning session was devoted to a discussion of the general subject, Handling Perishables by Rail, while the subject for the afternoon session was Design of Railway Refrigeration Equipment.

One of the most frequent introductory sentences heard during the discussions was something along this order: "I don't know much about railroading, but would it not be practicable to—," and usually the sentence was completed with some constructive suggestion. Of course, it was always a refrigerating engineer who knew comparatively little about railroading, but who knew a lot about refrigeration, who made this remark. Likewise, there were a number of railroad men present at the meeting who were not experts in refrigeration, but who did know considerable about railroad transportation. Thus, questions were asked and answered to the mutual benefit of both sides.

There is no question but that joint sessions of this character are of benefit to the railroad industry. They not only serve to develop new ideas, but they have an educational value as well. There is considerable misunderstanding among technical men in other industries as to the requirements of the railroads, and why the railroads follow certain policies. The giving of reasons as to why certain methods successful in manufacturing operations cannot be applied to railroad shop work and the explanation of them by competent engineers employed in railroad maintenance work, who also have a fairly clear understanding of modern manufacturing methods, should accomplish results in educating many technical men who criticize the railroads. It may be also that the railroad man occasionally will find some of his reasons for not following a practice de-

veloped in manufacturing work not so good as he first believed. "No man liveth unto himself," and the same may be said of an industry.

## Securing Suggestions from Employees

THE general manager of the New Zealand Government Railways, in a message published in the March issue of the New Zealand Railways Magazine, discusses certain phases of his administrative methods. In this connection he says:

"The need for a liberal interpretation of public transport requirements was never greater than at the present day. The difficulty is to properly understand these requirements and then relate the provision of facilities and appliances, disposal of rolling stock and allocation of motive power in just proportions. In order to obtain the best possible information I recognize it as necessary that there should be an uninterrupted relation of knowledge through all the grades in every branch of the service towards the general management, and a return radiation of the accumulated pooled knowledge and of the decisions made in relation thereto through each of the respective branches. In achieving this purpose I have found it convenient at times to hold conferences of different grades upon special points requiring the best information available for their solution. For instance I had occasion some while back to call together representative shunters to discuss matters arising out of their daily work. This month a conference of principal station-masters was held to discuss the passenger transport requirements of their respective localities. . . ."

This innovation on the New Zealand railways seems to parallel to some degree the conferences held under several plans of employee-management co-operation in this country. In addition many railroads solicit suggestions from employees to be submitted by them in writing. While this method has been productive of good results—nevertheless there is much to be said in favor of the personal contact to be gained in an open meeting. Employees then have the assurance that their suggestions will really be heard and considered by those in authority, whereas, if the operation of the plan is left to correspondence, there is always the suspicion—whether justified or not—that the suggestions will be pigeonholed and never fairly considered, or that someone else will receive credit for the idea.

Experienced railroad employees, are on the whole intelligent and competent men. Any plan designed to bring the benefit of their experienced opinion to the aid of management is worthy of serious consideration. If two heads are better than one, then several thousand heads are better than half a dozen—particularly if a plan can be devised for limiting participation to those who really have meritorious ideas to offer, without giving free rein to the many who are willing to talk at length but who have nothing constructive to say.

## Indexes to Volume 86

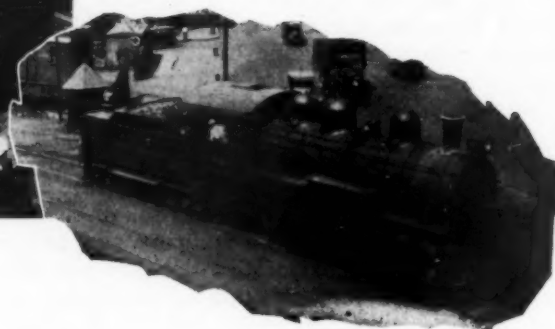
THE indexes to the last volume of the *Railway Age*, January to June, 1929, are now ready for distribution. Those desiring indexes to this volume should advise the New York office, 30 Church Street.

# New York Central Plans on West Side

*\$175,000,000 Project on Manhattan  
new tracks, grade separation,  
an elevated express  
of 12-mile*



*Above—Looking From Tenth Avenue Toward Eleventh Avenue Through a Part of the Present Thirtieth Street Yard. Right—One of the Switch Engines Operating in and About the Thirtieth Street Yard*



**A**FTER more than a generation of agitation and concerted study and planning, negotiations between the New York Central and the city of New York, relative to an extensive program of improvement of the railway facilities along the west side of Manhattan Island were brought to a successful conclusion on July 5, 1929, when an agreement covering the major aspects of the plan under which the work will be carried out, was executed between the city and the railroad. This project, which will involve the expenditure of \$175,000,000, concerns the freight tracks of the New York Central which extend along the Hudson river water front on the west side of Manhattan Island for about 12 miles, from a highly developed industrial section at the lower end of the city, through active commercial districts, and through Riverside and Fort Washington Parks to Spuyten Duyvil creek, or what is known as the Harlem River Ship Canal.

The plan includes the removal of all tracks from the street level south of Sixtieth street and the elimination of grade crossings north of that point, the relocation of a large part of the old line, the construction of new yards and additional trackage, and the electrification of the entire line. Altogether 93 grade crossings will be eliminated. The removal of tracks from the streets south of Thirtieth street will be effected by their transfer to a viaduct which will be built, while the elimination of grade crossings north of that point involves several miles of track depression with street bridges overhead.

Linked with this work of the railroad are a number of major improvements to be made by the city, the most important of which is an elevated express highway which will extend from the lower end of the city, near Canal street, throughout the length of the city, north

to Spuyten Duyvil. South of Sixtieth street this highway will be entirely independent of the railroad improvement, but north of this point it is to be located directly over the main tracks of the west side freight line.

## General Accord Prevails on Plans

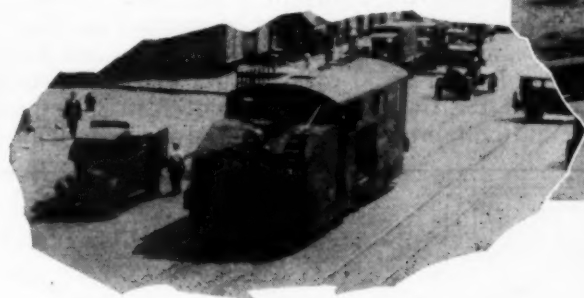
The plans for the improvement have been developed largely from studies made by a special engineering committee formed to devise the most suitable means of correcting the adverse conditions along the old line, the most outstanding of which are the difficulties of train operation and the constant menace to public safety where the trains are operated at street grades. There have been a number of other growing objections to the present line, such as the smoke from passing trains and the noise of locomotives, especially at night, and with the increasing importance of these, coupled with the growing congestion with the development of the city, the scope of the improvements studied throughout the years has steadily widened until the present comprehensive plan was evolved.

With an unusual degree of accord existing, and the fact that work on the project is already under way, there is every reason to believe that the present improvement will be carried forward at a rapid rate. Already the city has begun the construction of the elevated express highway at its southern terminus near Canal street, and the railroad is letting contracts for its share of the work as fast as detailed plans can be prepared. Specific provisions in the agreement call for the electrification of the line as far south as Seventy-Second street by June 1, 1931, and the suspension of all train operation in the city streets within five years from the date of the agreement. The agreement also



# s Extensive Improvements e in New York

*Island involves electric operation,  
commercial development and  
highway over tracks  
freight line*



Above—Looking North From Fifty-Ninth Street Over the Present Sixtieth Street Yard and West End Avenue. Left—One of the Housed-In Switching Locomotives Operating in Tenth Avenue.

stipulates that the express highway of the city shall be completed as far north as the Sixtieth Street yard of the railroad by July, 1931.

## Present Line Occupies Many Streets

The so-called west side line of the New York Central, which is the only freight line on Manhattan Island, has meant much to the growth and welfare of the city owing to its importance in the transportation of food products, merchandise, express, milk and other commodities demanded by the city. Owing to the rapid growth of the city and the congestion which necessarily followed along the west side line, the present facilities have been greatly overtaxed and train operation has been seriously hampered. Under the new plan this congestion will be entirely relieved, not only by the elimination of all grade crossings and the re-arrangement and enlarging of the old facilities, but also through the fact that the proposed plan provides for the extensive development of the air rights above a large part of the railroad's facilities.

The present line extends from St. John's Park, in a highly industrial section about one mile north of the lower end of the island, north along the east shore of the Hudson river for a distance of about 12 miles, to a junction with the main line of the New York Central north of Spuyten Duyvil creek. From St. John's Park the line runs north at street grade through Hudson street to Canal street, where it turns west in Canal street to West street, which it occupies north to the intersection of that street with Tenth avenue, and then continues north in Tenth avenue to Thirtieth street, where it swings west through a private right-of-way and enters Eleventh avenue, near Thirty-Third street. Continuing north in Eleventh avenue to Sixty-First street,

the line again enters a private right-of-way along the Hudson river, where it extends to a junction with the main line at Spuyten Duyvil, crossing several streets at grade.

## Present Yards Are Inadequate

The line, for the most part, is double-tracked, has numerous side tracks and several yards, and has always been operated by steam. At St. John's Park there is a freight house with a storage warehouse above, which covers an entire city block. This house is served by eight stub-end tracks, and all of the switching of cars to and from the house is necessarily done at grade in Hudson street.

Bounded by Twenty-Ninth street on the south, Thirty-Seventh street on the north, Ninth avenue on the east, and Twelfth avenue on the west, is the second largest yard on the line, which occupies eleven city blocks and has a capacity of 1,347 cars. This yard, which is known as the Thirtieth Street yard, serves a large number of warehouses, a wholesale provision market, a milk station, an express terminal, a hay market, two transfer bridges, three piers, inbound and outbound freight houses, team tracks and an engine terminal. While generally inadequate in capacity to meet present day requirements, the outstanding difficulty presented at this yard is the fact that the yard is cut up into several units by city streets, which greatly hampers switching movements.

The main yard on the west side line is located between Sixtieth street and Seventy-Second street, but because of the limited space available, the individual tracks are short and have stub ends, and most of them are built on curves. This yard, which has capacity for 2,287 cars, serves various piers, transfer bridges, a

grain elevator and live poultry facilities, and in addition, has a large number of classification and team tracks and an engine terminal. All of the tracks, however, are relatively short and no track is of sufficient length to accommodate a full train. Other smaller yard facilities on the line are located at Seventeenth street, Forty-First street, and at Manhattanville in the vicinity of One Hundred Forty-Fifth street.

#### Heavy Traffic Handled Under Difficulties

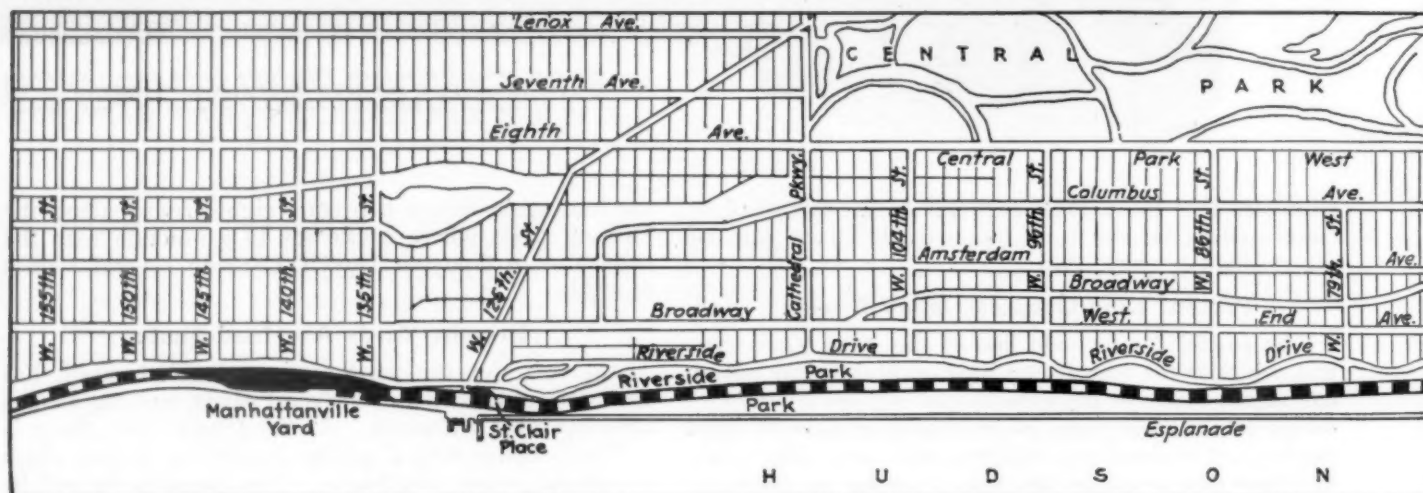
Operation of the old line between St. John's Park and Sixtieth street is carried on subject to many hindrances. Since the tracks occupy the city streets between these points, their use is governed by numerous city regulations and interfered with by heavy vehicle traffic, so that rapid and efficient train movement is impossible. To promote safety through this section, special boxed-in locomotives are used, and trains are preceded by mounted flagmen who warn drivers and pedestrians.

An average of 794 cars are received and 884 cars are forwarded over the west side line daily. The cars received include about 50 express cars, 164 milk cars and 580 loaded and empty freight cars. The cars forwarded include 50 express cars, 164 milk cars loaded with empty cans, and about 670 loaded and empty freight cars. About 38 per cent of the eastbound

street and Eleventh avenue, while special facilities are provided at the Thirtieth Street yard and at Manhattanville for the handling of milk. About 41 cars of eastbound l.c.l. freight are handled daily at St. John's Park, 36 cars at Thirty-Third street and 5 cars at Manhattanville, while westbound l.c.l. freight amounts to about 21 cars at St. John's Park, 70 cars at Thirty-Third street and 2 cars at Manhattanville daily. No l.c.l. facilities are located at the Sixtieth Street yard. An average of about 63 trains are handled daily between Sixtieth street and Spuyten Duyvil, of which 32 are eastbound and 31 westbound.

Many restrictions are placed by the city on train operation on the line. Most of the through train movements are made between the hours of 7 p.m. and 8 a.m. No trains can be operated on Eleventh avenue between the Thirtieth and Sixtieth Street yards between the following hours: Sundays—10 a.m. to 12 m.; week days—between 6:50 a.m. and 7:20 a.m., 8:15 a.m. and 9 a.m., 11:50 a.m. and 12:55 p.m., 2:50 p.m., and 3:30 p.m., and 4:45 p.m. and 5:15 p.m.

Between the hours of 8 a.m. and 7 p.m. trains of more than 25 cars cannot be handled on Eleventh avenue, and between the hours of 7 p.m. and 8 a.m. trains are limited to 30 cars. South of the Thirtieth Street yard the train lengths are not restricted by the city, but the railroad has found it advisable to limit trains in



Sketch Plan of the West Side of Manhattan Island Showing Proposed Layout of

freight is perishable and 62 per cent non-perishable products, while about 93½ per cent of the westbound freight consists of non-perishable products and only about 6½ per cent perishable.

Of the eastbound freight cars received at the Sixtieth Street yard, about 40 per cent are delivered by rail to the St. John's Park and Thirty-Third Street stations; 29 per cent are delivered by floats to pier stations and other railroads; 9 per cent are delivered by lighters to piers and steamers; and 22 per cent are unloaded locally. Of the westbound cars received at the same yard, about 32 per cent are received by rail from the St. John's Park and Thirty-Third Street stations; 47 per cent by floats from pier stations and other railroads; 15 per cent from lighters; and 6 per cent are loaded locally. In handling switching and through movements on the line, 2 locomotives are employed daily at St. John's Park, 11 at Thirty-Third street, 16 at Sixtieth street, and 1 at Manhattanville.

Express shipments are all handled at the American Railway Express Company's terminal at Thirty-Third

this territory to 15 cars. Practically all of the grade crossings between Thirty-Third street and Sixtieth street are protected by crossing watchmen 24 hrs. a day.

#### Elevated Terminal Planned at South End of Line

In the new improvement the St. John's Park terminal and all of the present line between it and the intersection of Canal and West streets will be abandoned permanently. In place of the present terminal, a new terminal, which will be known as the Spring Street terminal, will be constructed on the four city blocks between Spring, Clark, Washington and West streets. In this terminal, which is planned with twelve stub tracks of various lengths, all of the tracks will be elevated above the street level, and the various groups of tracks will be served by high-level platforms.

Below the track level, which will be supported on a structural steel structure, provision will be made for trucking driveways and platforms which will be joined with the high-level track platforms by freight elevators. Present plans call for the roofing over of the entire ter-



minal; however, ultimate plans contemplate the utilization of the air rights over the terminal in the construction of a large multiple-story warehouse over the entire terminal area. Ultimate plans also contemplate the construction of an arcade under certain of the tracks along the Washington street front of the terminal, a feature which will further assist in relieving traffic congestion in Washington street by providing a place for loading and unloading of tracks outside of street lines.

#### Elevated Structure Provided Downtown

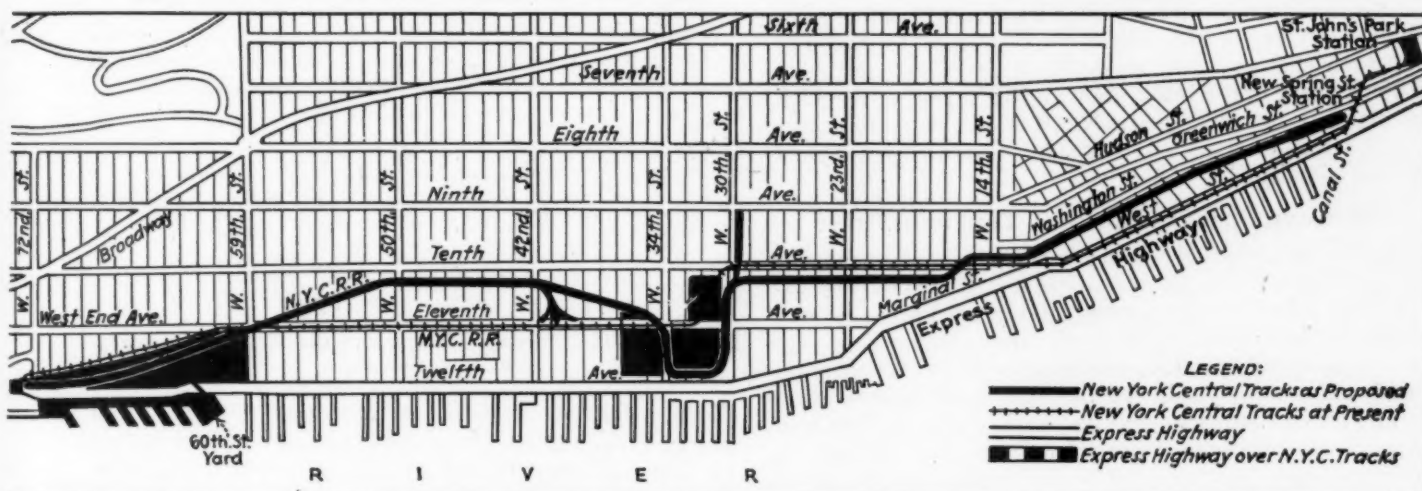
From this new south terminal to the Thirtieth Street yard the new line will consist, in the main, of two tracks carried on an elevated structure located on a private right-of-way. For the first 15 blocks this new right-of-way will extend along and immediately adjacent to the west line of Washington street, and in this location will pass through a number of existing structures now fronting on that street. Many of these structures will, of necessity, have to be razed, and it is expected that, eventually, the entire street front will be lined with large industrial plants and warehouses, which can avail themselves of the air rights over the elevated track structure and extend out to the curb line of the street.

In the fulfillment of this development the railroad structure will be entirely independent structurally of

At the end of Washington street the new line will cut diagonally across two city blocks now occupied by large packing industries, and will then swing across Tenth avenue at Seventeenth street, where there is at present a small team yard at grade, handling perishable produce principally. This yard will be abandoned, but the railroad reserves the right to serve any of the industries located in this vicinity with elevated spur tracks if it desires.

#### Enlarged Yard Planned at Thirtieth Street

From Seventeenth street north to Thirtieth street, the new line will extend through a private right-of-way located parallel with Tenth avenue and about 100 ft. back from the street line. At Thirtieth street the line will swing abruptly to the west along Thirtieth street, cross Eleventh avenue overhead, and continue to Twelfth avenue, where it will swing to the north along the east line of Twelfth avenue. Just north of Thirty-Fifth street the line will swing back to the east, re-crossing Eleventh avenue, but this time in an under-crossing. The purpose of this proposed abrupt swing in the line is to keep the overhead structure outside the limits of the large low-level yard planned in this territory, and at the same time to lose altitude in changing from an elevated line south of Thirtieth street to a depressed line north of Thirty-Fifth street. All of the



the New York Central's Tracks and the Express Highway to be Built by the City

the buildings erected, and will have the appearance of passing through an arcade along the street front. The plan also makes provision for the construction of sidings and spur tracks to serve industries or warehouses along the main line, and, in addition, contemplates the construction of a paved driveway under the track structure at the street level. As at the St. John's Park terminal, this will permit trucking operations to and from the buildings along the street front without interfering with traffic in Washington street.

The decision to employ an overhead structure in this vicinity, rather than a subway, was arrived at primarily because of the fact that the elevation of rail in any subway constructed in this territory, with proper cover, would be about 30 ft. below mean high water of the Hudson river. Such construction would not only be difficult and costly, but likewise, maintenance expenses in keeping it free from water would be large. It was also felt that it would be so costly as to be practically prohibitive to add industrial sidings or spur tracks to such a subway.

property included within the proposed swing of the main tracks at Thirtieth street is owned by the railroad, and, to a large extent, is occupied by the present Thirtieth Street yard at grade.

The new plan provides for the entire revision of the tracks in this yard, which will increase the capacity of the yard from 1,347 cars to about 1,515 cars. Furthermore, it provides for the construction of extensive freight and warehouse facilities at this point. The yard, which will be located on the ground, will involve extensive grading and street alterations in order to preclude the interference of rail and street traffic. Several streets within the yard area will be closed and the major street alterations will involve the elevating of Eleventh avenue and Thirty-Third and Thirty-Fourth streets so as to carry them over the yard tracks.

Plans in this vicinity also give consideration to the possibility of a second-level yard which could be constructed directly above certain portions of the ground-level yard. While there is no thought of undertaking this part of the project in the near future, consideration



Architect's Drawing Showing Future Development Over Tracks Along Washington Street

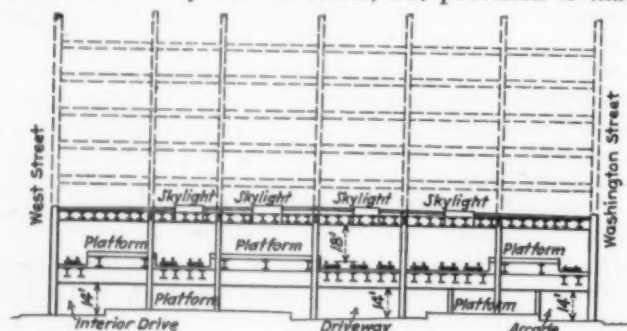
will be given to this possibility when locating the yard facilities at the ground level.

All leads to the proposed Thirtieth Street yard will extend to the north on a descending grade and join the main line tracks in a private depressed roadway. This section of the line will extend north between Tenth and Eleventh avenues, and at Fifty-First street will swing to the west, cross Eleventh avenue in an undercrossing, and then emerge from the depressed right-of-way on a 0.36 per cent grade into a new and enlarged yard which is planned between Fifty-Ninth street and Seventy-Sixth street to replace the present Sixtieth Street yard in this vicinity.

#### Extensive Changes North of Thirtieth Street

In the new Sixtieth Street yard, which, according to present plans, will have a capacity of 2,900 cars instead of 2,287 cars at present, five main units are provided—a float yard, a pier yard, an eastbound receiving and forwarding yard, a westbound hump classification yard and a milk yard. In the new arrangement practically all of the tracks will lie parallel with the Hudson River front and the different units will be located at various levels best adapted to the ground conditions in this vicinity.

At this point the new elevated express highway of the city will first come in contact with the new railroad facilities. Extending north from Canal street the new highway will enter the south end of the Sixtieth Street yard at Fifty-Ninth street, and will extend through the yard on an overhead structure, parallel with and over certain yard tracks on the west side of the yard. Only one width of highway is planned from Canal street north to Seventy-Second street, but provision is made



Typical Section Through the Proposed Spring Street Terminal in Lower New York

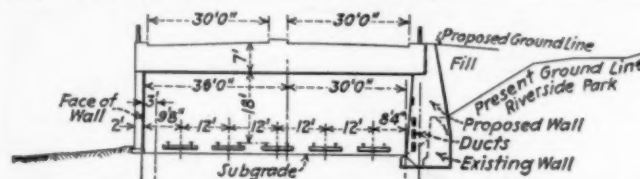
whereby a double-width highway can be provided throughout the length of the Sixtieth Street yard when traffic demands.

North of this yard the highway will continue on an elevated structure over the five main-line tracks of the railroad which will occupy much the same right-of-way as at present, skirting along the water front in Riverside Park in the side hill cuts which predominate in this territory. In order to obscure the railroad and to make possible the reclamation of certain unbeautiful lands between the park and the right-of-way, it is planned to construct a high retaining wall along the east line of the right-of-way and to back fill to the general level of the park. The west side supporting structure of the overhead highway, except through cuts where piers or retaining walls will be used, will be a segmental arch wall, which will not only be pleasing in appearance, but which will provide light and ventilation for train operation.

The present grade crossings at Seventy-Ninth and Ninety-Sixth streets will both be eliminated by elevating the pavements to the level of the express highway, and, at a number of points throughout the length of the park, provision will be made for pedestrian subways across the railroad right-of-way through the highway deck structure above the railroad tracks.

#### Facilities at Manhattanville to Be Changed

Continuing north under the highway, the railroad grade will rise and fall on easy gradients more or less as at present. At One Hundred Twenty-Ninth street the so-called Manhattanville valley is encountered,



Typical Section Through Tracks and the Express Highway in Riverside Park

which is industrial in character up to One Hundred Thirty-Fifth street. In passing through this territory the line will begin to rise at a point just north of One Hundred Nineteenth street and climb on a 0.65 per cent grade to an overhead crossing of St. Clair place, the first crosstown street south of One Hundred Twenty-Fifth street. Continuing to the north on an overhead structure, it will cross over One Hundred Twenty-Fifth, One Hundred Thirty-First, One Hundred Thirty-Second, One Hundred Thirty-Third, One Hundred Thirty-Fourth and One Hundred Thirty-Fifth streets, and then, about 150 ft. north of One Hundred Thirty-Fifth street, the tracks will jump from the viaduct structure to a fill and drop down about 25 ft. on a 0.65 per cent grade to a more or less level line through Fort Washington Park. At a point about 1,600 ft. south of Inwood Park the tracks will again climb on a 0.65 per cent grade to provide for an overhead crossing at Dyckman street.

From the One Hundred Twenty-Fifth Street crossing to One Hundred Thirty-Fifth street the entire area adjacent to the east side of the elevated structure is to be developed into warehouse sites, much the same as along the west side of Washington street at the south end of the improvement. Here, seven elevated tracks are planned, four of which will be located under the express highway and the other three in an arcade under the upper stories of the proposed warehouses.



From One Hundred Thirty-Fifth street north to One Hundred Forty-Fifth street all streets crossing the tracks at present will be closed west of the tracks. This area, which is now occupied by the Manhattanville yard, will be enlarged to a new bulkhead line established in the river and will be occupied by an entirely new yard layout, considerably enlarged to meet existing operating conditions at this point. In the main the tracks of the new yard will be grouped in pairs, with wide intermediate driveways for teaming, and several of the tracks will be served by elevated platforms for the handling of milk. A retaining wall extending from One Hundred Thirty-Seventh street to One Hundred Forty-Eighth street will separate the high-level main-line tracks on the proposed earth fill from the low-level tracks in the yard. The only street to cross the yard, One Hundred Forty-Fifth street, will be carried on an overhead structure.

#### Double-Deck Bridge Planned Over Ship Canal

North of One Hundred Fifty-First street, where an overhead pedestrian crossing will be provided, the tracks will remain on their present alignment and at approximately their present grade, past One Hundred Fifty-Second street (the end of Riverside Park), and through Fort Washington Park to a point about 1,600 ft. south of Inwood Park where, as before mentioned, the tracks will rise on a fill to an overhead crossing at Dyckman street. Throughout much of this territory conditions are similar to those found in Riverside Park, and where the railroad tracks will not be completely obscured from view from the park by the overhead highway and the high ground along the east side of the right-of-way, they will be obscured by retaining walls and filled-in ground. The west side supporting wall of the express highway, like much of the west side wall through Riverside Park, will be designed with segmental arches.

Through Inwood hill, north of Dyckman street to Spuyten Duyvil creek, the new line, with four tracks, will parallel the present line, but will be located about 50 ft. east of it and about 20 ft. above the present line. In crossing Spuyten Duyvil creek, otherwise known as the Harlem River Ship Canal, a new high-level, four-track, double-deck railroad-highway lift bridge is planned. Just north of the bridge, in a novel arrangement of viaducts and fills, the four west side freight line tracks will be spread out into six tracks and so connected with the main line tracks as to preclude interference with main-line traffic, particularly passenger traffic to and from the Grand Central terminal. From the bridge the express highway will swing to the east of the main line, crossing the main line tracks overhead, and will then continue to the north in an alignment independent of the tracks and as yet not finally determined.

While final detailed plans have not been completed for any of the elevated railroad structures in the new



Looking North in Eleventh Avenue Over Street Traffic Crossing Twenty-Six Tracks of the Thirtieth Street Yard

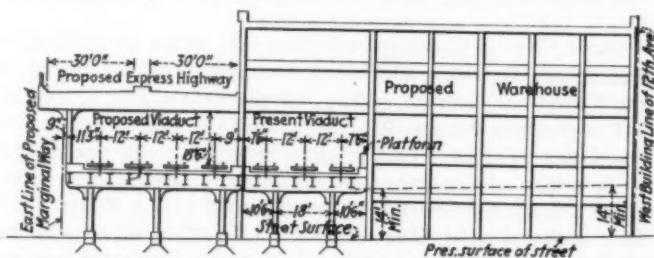
improvement program, it has been agreed definitely that all of these structures shall be of pleasing appearance and so constructed as to present a minimum of interference to pedestrian and vehicular traffic. In this latter regard all overhead structures will have underclearances of 14 ft. above street grades, and all streets 60 ft. or less in width will be crossed by continuous spans. At crossings of greater width than 60 ft., intermediate columns may be used, but when resorted to they will be located at the curb lines only.

The entire viaduct structure from St. John's Park north through the Thirtieth Street yard will consist of girder floor beams and stringers supported on steel columns, and will have a solid reinforced concrete deck structure with side parapets and ornamental balustrades. The track structure will consist of 105-lb. rail and treated ties equipped with tie plates, and will be provided with a stone ballast section throughout.

The entire structure will be self-supporting and independent of all adjacent structures. Likewise, all buildings which may be constructed over or alongside the viaduct will have independent foundations, a provision which will minimize vibration in the buildings occasioned by the operation of trains. At street crossings and at other exposed places the viaduct will be given certain ornamental treatment so as to improve its appearance. North of the Thirtieth Street yard, in the depressed section of the line extending to the Sixtieth Street yard, all streets will cross the tracks on steel girder bridges with suitable paved decks, supported on concrete abutments at the right-of-way lines and two rows of steel supporting columns made to rest on footings located between track centers. In the vicinity of Manhattanville the elevated railroad structure will also be of steel construction, of sufficient strength in this instance, however, to carry the overhead express highway structure in addition to the railroad tracks.

#### Express Highway an Important Feature of Plan

The express highway, beginning at Canal street will be a reinforced concrete structure supported on structural steel columns, with a deck of sufficient width to carry two 30-ft. traffic lanes. Present plans call for only a single deck north to the Sixtieth Street yard, but



Typical Section Through Proposed Facilities Near One Hundred Thirty-Second Street in Manhattanville



all foundations and supporting columns for the initial structure will be provided of sufficient size to carry an additional upper deck to be constructed later if traffic conditions warrant.

A single deck structure only is also planned for the present through the Sixtieth Street yard, but in the event of the necessity for double decking the structure south of Sixtieth street, it is planned to bring these decks to a common level at about Sixty-Fourth street and to continue them as far north as Seventy-Second street, through the yard, as two highways, side by side, each with two 30-ft. traffic lanes. North of Seventy-Second street, where it is expected that traffic will be somewhat less than through the lower sections of the city, only one width of highway, with two independent 30-ft. lanes, is contemplated.

Throughout its length the express highway structure will be made pleasing in appearance, particularly so through the parks north of Seventy-Second street and at other points where it will be most exposed to view. Suitable ramps with easy grades will be provided at the more important streets throughout the length of the highway for north and southbound traffic approaching or leaving the new elevated structure.

#### Many Problems Will Be Encountered in Work

In carrying out the extensive work planned in this important project, which is expected to be completed in about six years, many extremely difficult construction problems are foreseen. The foremost of these appears to be in connection with the extensive yard work at Thirtieth and Sixtieth streets, where the track layouts will have to be completely revised and new yard levels established without interfering with traffic. Adding to the complications, poor bottom will be encountered at many places, particularly at the yards, and it is expected that foundations for the viaducts and warehouses will have to be carried down a considerable distance at these points, possibly 100 ft. or more in some cases.

Electrification of the line will be simplified somewhat by the fact that the west side line is entirely within the electric zone of the railroad. It will be simplified further by the fact that it is expected that Diesel-electric motors will be used exclusively on the line south of Seventy-Second street, precluding either third rail or catenary construction.

In anticipation of the successful culmination of the plans as finally adopted, certain work fitting into the plans has already been done by the railroad. The more important of this work includes the elevation of three tracks from St. Clair place to One Hundred Thirty-Sixth street, and two tracks from that point north through the Manhattanville yard; the elimination of the grade crossing at Dyckman street through track elevation and street depression; and the partial electrification of the line south to Seventy-Second street by means of a third rail system similar to that used on the electrified zone of the main line. Most of this work has been carried out under orders from the Transit Commission of the City of New York.

The basic plans for the extensive west side improvements were prepared by the West Side Improvement Engineering Committee, made up of the following men: William C. Lancaster (chairman), chief engineer, Transit Commission; J. R. Slattery, acting chief engineer, Board of Transportation; Arthur S. Tuttle, chief engineer, Board of Estimate and Apportionment; C. M. Pinckney, chief engineer, Borough President of Man-

hattan; Billings Wilson, deputy manager, Port of New York Authority, and R. E. Dougherty, engineering assistant to the president, New York Central. The findings of this committee were submitted to the mayor on May 13, 1927, and since that time such modifications of the plans as were found advisable were developed by representatives of the New York Central and the Board of Estimate and Apportionment of the city.

## Commission to Consider Consolidation in the Fall

WASHINGTON, D. C.

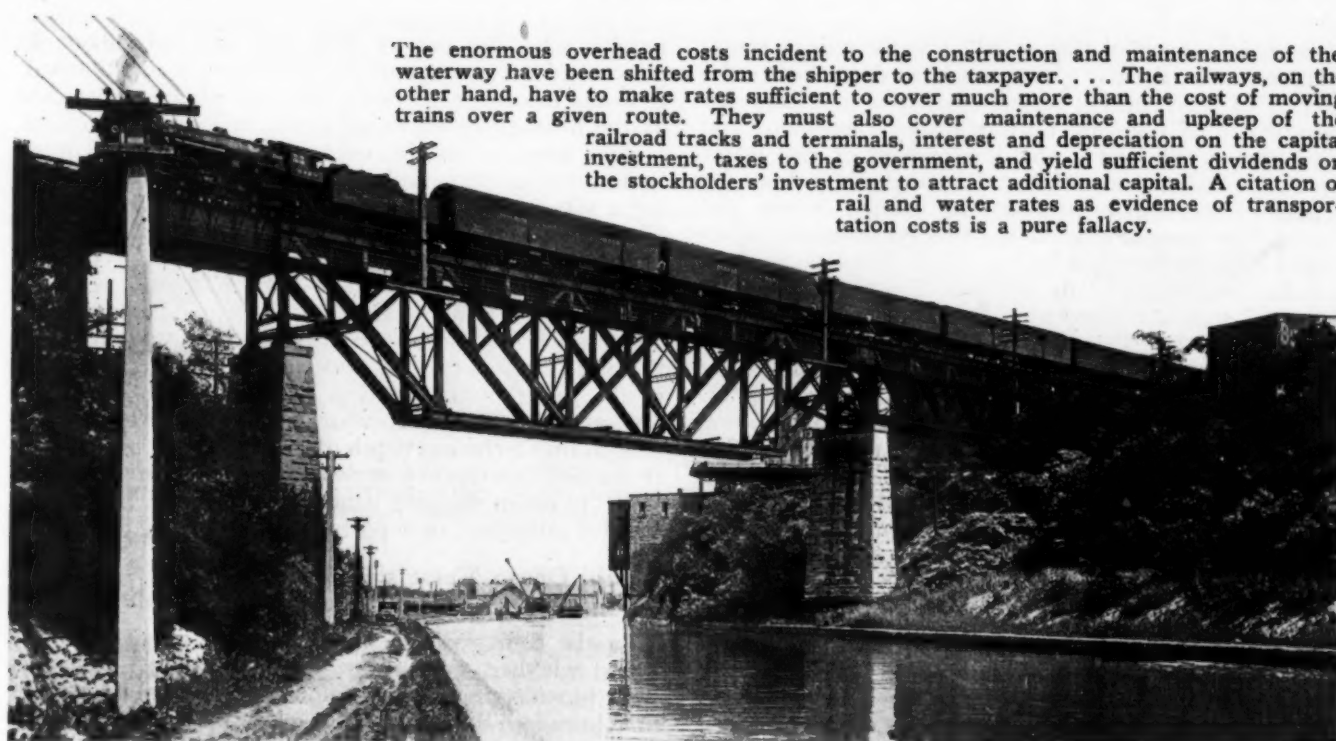
THE Interstate Commerce Commission expects to take up this Fall, after the vacation period, the recommended plan for the consolidation of the railroads "into a limited number of systems" submitted to it two or three months ago by Commissioner C. R. Porter, who is chairman of the commission's consolidation committee. Commissioner Porter, who believes that the commission should adopt a consolidation plan such as was directed by the Transportation Act, of 1920, before passing on individual applications filed by various roads, also recommended a plan of procedure and the commission has decided, it is understood, that it will not be necessary to hold further hearings on the plan, in view of the large amount of testimony taken in connection with the tentative plan promulgated in 1921 on the basis of the report by Professor Ripley and the large amount of additional data since collected.

Although the commission had repeatedly recommended to Congress that it be relieved of the duty of preparing a complete plan, it was decided that if no legislation on the subject were passed at the session of Congress which adjourned in March it would be necessary to resume work on a plan and Commissioner Porter's recommendations, details of which have not been made public, are a first step in that direction.

The commission has not yet assigned for hearing the various applications filed with it by the Baltimore & Ohio and Chesapeake & Ohio, which contemplate a four-system allocation of lines in the East, the Wabash, which proposes a six-system plan, the Pittsburgh & West Virginia, which is along the lines of a five-system plan, nor the rival applications for authority to acquire control of the Wheeling & Lake Erie and the Western Maryland. Whether these will be deferred until after the promulgation of the commission plan, it is stated, will probably depend largely on what progress is made toward the adoption of the commission plan. If it takes too long to bring about an agreement of a majority of the commissioners it would probably be necessary to proceed on the separate applications.

The law provides that after the adoption of such a plan the commission may, upon its own motion or upon application, at any time re-open the subject.

SIXTY CARS is the estimated space that would be required to contain the livestock which has been killed on the tracks of the Central of Georgia within a single year—1928; a total of 142 mules and horses, 931 cattle and 549 swine; besides 39 goats and 34 dogs. This is an average of about one animal to each mile of Central of Georgia track. These figures make those recently published for a smaller road (for a longer time) look rather small. The Central of Georgia advertises this 1928 record in the newspapers and appeals to stock owners to take better care of their animals.



The enormous overhead costs incident to the construction and maintenance of the waterway have been shifted from the shipper to the taxpayer. . . . The railways, on the other hand, have to make rates sufficient to cover much more than the cost of moving trains over a given route. They must also cover maintenance and upkeep of the railroad tracks and terminals, interest and depreciation on the capital investment, taxes to the government, and yield sufficient dividends on the stockholders' investment to attract additional capital. A citation of rail and water rates as evidence of transportation costs is a pure fallacy.

New York Central Bridge Over New York State Barge Canal at Lockport, N. Y.—Ewing Galloway Photo

## St. Lawrence Waterway Construction Found Not Justified

*Institute of Economics and Brookings Institution  
study finds no economic basis for project*

THREE double-track all-freight railroads from Chicago to Boston could be constructed and equipped for approximately the cost of the proposed St. Lawrence waterway and would have a combined theoretical maximum capacity approximately 30 times that of the water route. This is one of the conclusions reached in a book on "The St. Lawrence Navigation and Power Project," by Harold G. Moulton, Charles S. Morgan and Adah L. Lee, published by the Brookings Institution, Washington, D. C. For several years the Institute of Economics of the Brookings Institution has been studying the economic aspects of the St. Lawrence waterway in its relationship to the general transportation and power problems with which both Canada and the United States are concerned. As a result of this study the conclusion is declared to be inescapable that the proposed 27-foot navigation project "cannot be justified on economic grounds, because the inclusive costs—to taxpayers and shippers—are much greater than present transportation charges." It is calculated that the taxpayers would be required to contribute about \$3.50 a ton for the benefit of such shippers as would use the route, whereas the Great Lakes-St. Lawrence Tidewater Association has claimed in its publicity material that the waterway would reduce the cost of moving freight to and from the Middle West by an estimated \$4 per ton.

"These overhead costs are not covered out of the rates

charged to shippers, nor are they to be met by the levy of tolls for the use of the waterway. They are to be paid out of the national treasuries of the two governments" the book says.

"Since grain constitutes over 60 per cent of the total traffic, and is fairly typical of the tonnage that would use the route, this commodity may be used to illustrate the fallacy in the argument that the Canadian and American people as a whole would realize great economic advantages from the St. Lawrence project. The overhead charges of \$3.50 a ton are the equivalent of about 11 cents a bushel on wheat and rye, the principal items of grain traffic. The inclusive cost of transporting wheat over the St. Lawrence waterway from Duluth to Montreal would be 5 cents—the actual water rate plus 11 cents subsidy contributed by taxpayers, making a total of about 16 cents a bushel. Existing wheat rates from Duluth to Montreal average 9 cents a bushel, and from Chicago to New York about 11.3 cents a bushel. The reductions in grain rates that would be effected by enabling ocean carriers to enter the Lakes, or lake boats to move down to Montreal, would be at the most 4 cents a bushel. Thus, in order to effect a reduction of 4 cents a bushel in the cost of moving grain, taxpayers in general would have to contribute about 11 cents a bushel."

The construction of the St. Lawrence waterway has been urged by its advocates upon three principal grounds.

WASHINGTON, D. C.



First, it is contended that it will greatly reduce transportation costs, thereby giving much needed relief to the interior of the country; second, that it is necessary for the purpose of relieving railway traffic congestion; and third, that it will lead to the development of vast water power resources. Since the St. Lawrence river flows for a part of its course between the United States and Canada, the co-operation of the two governments is required if the project is to be carried to completion.

It has been estimated by the Joint Board of Engineers that a 27-foot waterway could be constructed at a cost of \$249,759,000. This figure, the book points out, does not include the costs that are assignable to the power development, amounting to approximately \$213,000,000 more. These estimates of the engineering board do not, however, by any means measure the total costs that would have to be incurred by the people of the United States and Canada in constructing the waterway and making it available for ocean shipping purposes. In the first place, interest on the capital invested during the years of its construction is admittedly not included; second, the cost of harbor improvements and port developments is omitted; and, third, the cost of the Welland Canal which the Canadian government already has under construction at an estimated cost of \$115,000,000 has not been included. On the basis of the known costs of similar waterway developments, the conclusion is reached that the total cost of constructing a 27-foot channel and providing that depth in interconnecting channels and lake harbors would amount to more than \$712,000,000, chargeable against navigation. If certain joint costs were charged wholly to power this would be reduced to \$614,000,000.

The annual overhead expenses on the navigation project, including maintenance and upkeep, it is estimated, would amount to at least \$40,000,000. This sum would be a direct subsidy intended to reduce the transportation rate that shippers would otherwise have to pay.

#### Depth of Channel Required for Ocean Shipping

It has been assumed in discussions of the project that a channel depth of 27 feet would accommodate, if not great passenger liners, at least the bulk of ocean shipping. An investigation of the depth required if the more efficient ocean cargo liners of the type that is now typically being constructed in world shipyards were to be able to enter the Lakes, shows, however, that a 27-foot channel would accommodate practically none of the combination passenger and cargo vessels now engaged in the overseas trade of the United States; that it would accommodate only about 13 per cent of the tonnage now operating on

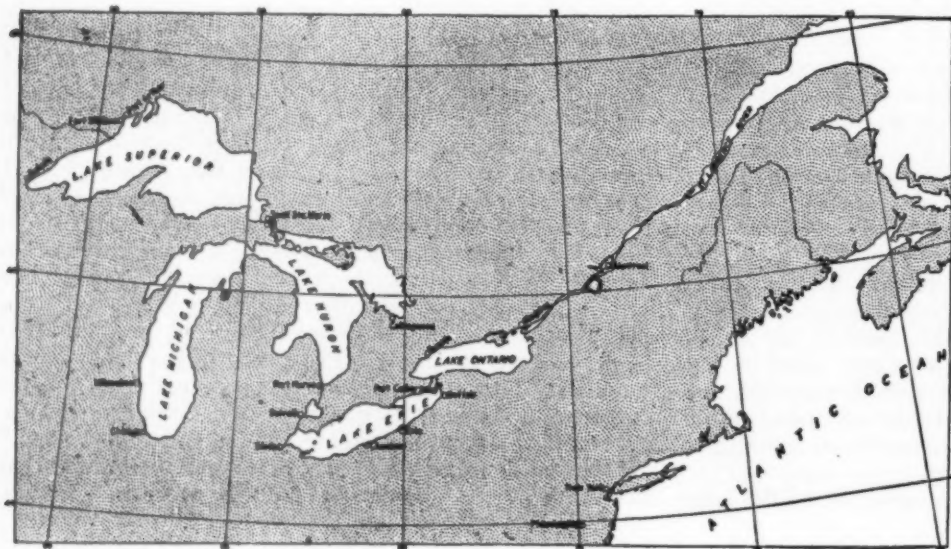
regular schedules out of Montreal, and only about 40 per cent of the tonnage of grain tramps out of Montreal. It would moreover, accommodate only about 38 per cent of the tonnage of all cargo boats, including tramps, at present engaged in the overseas trade in the United States, and including only 15 per cent of the vessels having a speed as great as 12 knots per hour. In brief, a 27-foot channel limited to vessels drawing 24 feet six inches would accommodate only boats of the type now engaged in the coastwise trade and the smaller steamers, mainly the war-built United States Shipping Board boats and trampers. In view of the depth now required for the more efficient type of ocean cargo liners, and in view of the fact that the trend in ocean shipping is steadily toward larger and deeper draft vessels, it is the conclusion that a channel depth of 33 feet would be required if the St. Lawrence waterway were to open the Great Lakes to ocean shipping generally and enable Lake cities to rival Atlantic Coast ports as entrepôts of commerce.

#### Would Ocean Vessels Find

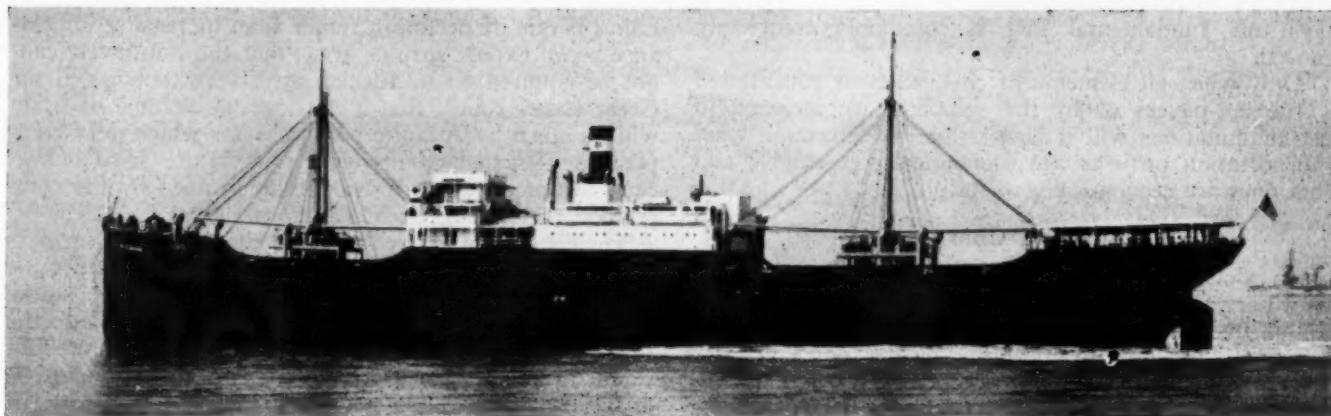
##### It Profitable to Enter the Lakes?

In the course of the investigation the question was raised whether, even if an adequate depth of channel were provided, ocean boats would establish regular shipping lines into the Lakes. Since the route would be open to navigation for only a little over half of each year, the question of prime significance was whether it would be practicable to operate regular liners in and out of the Lakes during the summer months, and then shift the vessels so employed to other trade routes during the winter months. The matter was taken up with the leading shipping companies of the world and it is stated that the opinion appears to be practically unanimous that cargo liners would find it impossible to shift during the winter months to other routes and find remunerative employment; and that it would be impossible to earn enough during the season of open navigation to permit the ships to lie idle during the off season. The case does not appear to be so conclusive with tramp vessels, it is stated, though even here great difficulties are foreseen in finding remunerative employment in the winter months for tramps engaged in the Great Lakes trade in summer.

The most that could possibly be expected is that the St. Lawrence waterway would be navigated by a limited number of second class cargo liners, by smaller coastwise vessels, and by tramp steamers, it is stated, and those who have assumed that ocean vessels generally would be attracted into the Lakes have obviously given no consideration to the problem as it presents itself to the ship owner.



The inclusive cost of transporting wheat over the St. Lawrence waterway from Duluth to Montreal would be 5 cents—the actual water rate—plus 11 cents subsidy contributed by taxpayers, making a total of about 16 cents a bushel. Existing wheat rates from Duluth to Montreal average 9 cents a bushel, and from Chicago to New York about 11.3 cents a bushel. . . . In order to effect a reduction of 4 cents a bushel in the cost (to the shipper) of moving grain, taxpayers in general would have to contribute approximately 11 cents a bushel.



A Moderate-Sized Vessel Such as This, with a Mean Load Draft of 27 ft.  $\frac{3}{4}$  in., Is Nevertheless Too Large to Pass Through the Proposed Waterway—Only 13 Per Cent of the Tonnage of Regularly Scheduled Vessels and Only 40 Per Cent of the Grain Tramps Now Operating Out of Montreal Could Use It

In estimating the traffic available a special investigation was made of every important class of traffic that might conceivably make use of the waterway. Instead of assuming as has been commonly done that practically all the traffic in a Great Lakes zone extending as far west as the Rocky Mountains would be "available" for the St. Lawrence waterway, each separate commodity was considered in relation to the waterway,—by studying its place of origin, its character, its shipping requirements, and the various commercial considerations which traffic men must consider. It is concluded from these analyses that the total volume of traffic likely to use the route if shipping services were provided would not exceed 10,500,000 tons annually, divided roughly equally between the United States and Canada.

A report prepared by the Great Lakes-St. Lawrence Tidewater Association had found some 30,000,000 short tons as the amount of traffic that would be available as soon as the waterway is opened and a study made by the Transportation Division of the Department of Commerce estimated from 18,600,000 to 23,700,000 long tons of traffic available for movement over the St. Lawrence. A critical appraisal of these traffic studies is presented in an appendix.

#### The Probable Cost

The cost of the project is summarized in round numbers as \$614,000,000 for navigation, (including \$115,000,000 for the Welland Ship Canal now under construction by the Canadian government, \$159,000,000 for improvements in the St. Lawrence river, \$90,000,000 for improvements in interconnecting lake channels and \$250,000,000 for improvements in lake harbor and port facilities, and \$385,000,000 for power, making a total of \$999,000,000, the costs incurred jointly for navigation and power being allocated entirely to power. In addition, it is stated, the development of the potential power available in the lower St. Lawrence, wholly within Canada, would cost, according to estimates submitted by the Joint Board of Engineers approximately \$225,000,000.

"The power project should not be expected to subsidize navigation," the authors say. "The navigation project must stand on its own feet, at least to the extent that costs have to be incurred solely for the purposes of navigation. The governments of Canada and the United States will be justified in incurring these costs only provided they will lead to a reduction in the cost of transportation."

"In concluding this discussion of the St. Lawrence waterway, it is desirable to point out why waterways generally have come to commend widespread popular

support. The movement for waterway improvements is based on the conviction that transportation over canals and canalized rivers, like that on the high seas, is very much cheaper than transportation by rail. This conviction is, however, the outgrowth of a wholly fallacious comparison of transportation rates supposed to show that a dollar will carry a ton of traffic many times as far over a canal or river as it will over a railway. The fallacy lies in the fact that the water rates cover only a portion of the costs.

"In the early days of inland water transportation in the United States, tolls were charged which were usually sufficient in amount to cover the overhead expenses incident to the construction and the maintenance of the waterway. The total cost of the water transportation was then measured by the tolls plus the rates charged by the owners of the boat lines. But, after the development of the railroads, it became necessary to abolish tolls in order for the boat lines to compete with any degree of success against the railroad carriers. This was true not only in the United States, where privately owned and operated railroads resorted at times to cut-throat competitive methods, but it was equally true in European countries where the railroads were owned by the government and where rates were rigidly controlled. Since the abolition of tolls, the rates charged to the shipper include only the so-called direct costs of moving freight a given distance; and they need be merely sufficiently high to provide a return to the boat owner on a toll-free waterway. The enormous overhead costs incident to the construction and the maintenance of the waterway have thus been shifted from the shipper to the tax-payer. These taxes are costs of transportation quite as much as were the tolls which the shippers formerly paid.

"The railways, on the other hand, have to make rates sufficient to cover much more than the cost of moving trains over a given route. They must also cover maintenance and upkeep of the railroad tracks and terminals, interest and depreciation on the capital investment, provide revenues for the payment of taxes to the government, and yield sufficient dividends on the stockholders' investment to attract additional capital into the railway business. Thus a citation of rail and water rates as evidence of comparative transportation costs is a pure fallacy. If a railroad were freed from all interest, dividend, and maintenance charges and from taxes as well, rates to shippers could obviously be greatly reduced. Such a subsidy from tax-payers would not, however, decrease the inclusive cost of shipping goods; it would shift the burden of a large part of the cost from those who receive the direct benefits of the transportation service, to tax-payers in general. In connection with water-



ways this fundamental fact is commonly completely ignored.

"Only when all elements of cost, whether contributed by the tax-payers or by the shippers, are included in cost computations will it be possible to determine what transportation projects are economically justifiable and what ones are economically wasteful."

#### Overhead Charges

It is calculated that the annual overhead charges against the waterway, that is the interest and depreciation on the capital investment and maintenance and operation of the route, would amount when figured on the most conservative basis, to approximately \$40,000,000 a year. If the so-called joint costs common to both navigation and power were allocated entirely to power, the charges against navigation would still be as much as \$36,000,000 a year.

The first chapter outlines the history of the movement for a St. Lawrence deep waterway and the arguments for the project. Chapters II and III discuss the depth of channel required, and Chapter IV takes up the ship-owner's problem.

In the latter chapter it is stated that the practical season for navigation for ocean vessels would be limited to about six and one-half months and that ships would have to operate between Montreal and lake cities at about three-quarters their normal rate of movement.

#### The Available Traffic

In the light of the shipping analysis presented in chapter IV the conclusion was reached that there is grave doubt as to whether any important shipping services would be established over the St. Lawrence waterway. However, giving the waterway the benefit of the doubt and assuming that not only would coastwise vessels and tramp steamers enter the Great Lakes, but that a second-rate liner service would also be developed between lake cities and Europe, two chapters, VI and VII, are devoted to the analysis of traffic possibilities.

A special analysis was undertaken of every commodity of any importance which might possibly use the route, with the assistance, largely by interview but in part by correspondence, of a great many traffic managers in important industrial and commercial establishments, and of official traffic representatives in several of the important cities on or adjacent to the Great Lakes. It was assumed that the waterway would not be available until 1940 and an allowance, usually 50 per cent, was made for growth in the amount of traffic available.

The total volume of traffic which might be expected to move over the St. Lawrence waterway is estimated at 10,500,000 tons, of which roughly 5,500,000 are credited to the United States and 5,000,000 to Canada. Exclusive of grain, however, the potential traffic assigned to the United States is more than double the amount assigned to Canada. A small number of individual commodities make up the bulk of the total traffic, as follows: grain, 61.3 per cent, fertilizers, 5.3 per cent; sugar, 4.8 per cent; petroleum, 4.8 per cent; coal, 3.3 per cent, and pig iron, 2 per cent.

In a detailed discussion of the agricultural traffic in Chapter VII, contributed by Edwin G. Nourse, it is shown that there has been a sharp decline in meat and animal fat exports during recent years; that packing house products require special handling and rapid and frequent transportation service; that dairy products likewise present little prospect of furnishing an important item of traffic; that, aside from wheat, the cereals do not offer important traffic possibilities for the St. Lawrence; that the wheat territory chiefly tributary to the Great

Lakes is one of declining rather than increasing importance as an export surplus area; that the Southwest cannot be counted on to furnish any large tonnage to the Great Lakes route; that a considerable volume of grain will be taken by Atlantic ports at rates which defy competition; that the actual freight rate via the Great Lakes-St. Lawrence waterway will be determined by the competition of existing Great Lakes carriers.

The conclusion arrived at is not that the grain farmers of the interior Northwest would receive no benefit if the St. Lawrence waterway reduced freight rates. "It is, however, clear," the author says, "That the gains to the farmer would be only the merest fraction of the amount claimed, and that such gains would in no small part be at the expense of other groups, including the farmers of the rest of the country."

#### Waterway Not Needed to Relieve Railways

Chapter VIII deals with the subject of "The Waterway and Traffic Congestion," stating that the revival of interest in a deep waterway between the Lakes and the seas dates from the period of severe traffic congestion on the railroads during and immediately following the World War. It is pointed out that conditions during and for a time after the war were quite abnormal but that the last year of poor service was 1922 and that since 1924 railroad service has been exceptionally good. Shippers for the last four or five years have been receiving practically 100 per cent compliance with their needs for cars, while service has also been expeditious and in all other respects extremely satisfactory. Improvements in railroad service have been effected chiefly by better utilization of existing facilities and the railroads at present have a substantial reserve of carrying capacity. The prospect for a continuance of comparatively high standards of railroad service appears to be reasonably good and it is estimated that a total of 550,000,000,000 ton-miles of traffic could be handled by existing railroads if their present carrying capacity were completely utilized. It is also declared that there are no serious physical obstacles to the expansion of railway facilities between the Middle West and the Atlantic seaboard.

Discussing the St. Lawrence as an agency for traffic relief the book points out that since the waterway would not be open for navigation for ocean vessels later than the middle of November it could not adequately take care of peak seasonal requirements, aside from the minor traffic peak which occurs in March, before the opening of navigation in the spring. Thus at least, the authors declare, the waterway could handle the normal peak load for only a portion of the peak load season and hence about the same amount of additional railroad facilities would be needed in any case.

Not only would the waterway not adequately relieve traffic congestion on through hauls between the Middle West and the Atlantic seaboard but it would still be necessary to provide the additional rail facilities required in originating and delivering the greater part of the traffic which might move over the water route. Moreover the waterway would not provide relief for that vast total of traffic which moves elsewhere than between lake ports and the Atlantic seaboard.

#### An All-Freight Railroad

Approaching the problem from the point of view of an inquiry whether there are not other and more effective means of relieving any traffic congestion that might possibly develop in the future it is first computed that the single lock-project, which would cost about

\$710,000,000, has a theoretical maximum carrying capacity of something like 42,000,000 tons a year, whereas the cost of an all-freight double-track railroad, from Chicago to Boston, about 1,033 miles, is estimated at \$250,000 a mile for line and terminal facilities and equipment, which would make the cost of the railroad approximately \$260,000,000. The interest charges on the capital investment in the railroad, figured on the same basis as with the waterway, namely at 4 per cent, are placed at approximately \$10,400,000. To include interest charges and the annual cost of maintaining the way and structures a figure of \$20,000,000 is given in contrast with similar overhead charges on the waterway of approximately \$40,000,000.

The theoretical maximum capacity of the railroad is figured at 420,000,000 tons per year both ways or approximately 10 times that of the St. Lawrence waterway, although it is pointed out that such figures are as far from actually realizable possibilities as are the theoretical maximum figures that are usually given for a waterway.

In the estimated cost of the waterway no provision was made for ships, whereas the railway figures given include rolling stock and equipment. Any compensating economies which the waterway might have would therefore be measured, the authors say, by the extent to which the cost of actually moving traffic by rail might exceed the cost involved in constructing and operating boats.

"The truth of the matter is that the direct cost of moving traffic a given distance over a railroad is only a little greater than the cost of moving the same traffic over an inland waterway." From the analysis in this chapter the authors arrive at three conclusions: "First, that in the normal course of development there is not likely to be any serious traffic congestion during the next decade or so; second, that the St. Lawrence waterway is not well adapted for the relief of traffic congestion; and, third, that in any event possible traffic congestion could be much more economically relieved by means of construction of a double-track railroad than by construction of the St. Lawrence waterway."

Chapter IX, "Relation to Railway Rate Control," while declaring that the general transportation difficulties under which the Middle West labors as a result of the Panama canal competition have been greatly exaggerated in recent discussions, states that the opening of the St. Lawrence waterway would not restore the equilibrium in transportation rates between the East and the Middle West and the West Coast which formerly prevailed and that a more effective means of restoring this equilibrium would be through controlling intercoastal water rates.

Assuming, however, that it is desirable to lower transportation costs between the Middle West and the seaboard, it is shown that transportation costs can be regulated more cheaply by other means than through the subsidizing of the waterway, first, by the construction of an all-freight railroad, which could carry traffic at much lower costs than could the waterway, and second, through legislative means at an infinitesimal expenditure of public money as compared with what would be involved in constructing the waterway. Relief could be made effective by granting low rates on all commodities originating in the interior and intended for export, and by granting low import rates on specified raw materials and finished products and on imported foodstuffs of a non-competitive character.

The St. Lawrence waterway would not be an effective agency for controlling railroad rates in general, the

book says, because, except in the case of grain and a few other items of traffic, the railroads would be under no compulsion to reduce their rates and the waterway would be able to compete for only a very small proportion of the traffic originating in or destined to the Middle West.

#### Railway Revenues Are Not Likely to Be Greatly Affected

"In view of the conclusions reached as to the volume and character of the traffic that would be likely to make use of the St. Lawrence waterway it is clear that no important effects on the earnings of American railroads are to be anticipated. It is estimated that something like 3.5 billion ton-miles represents the probable extent of outright traffic diversion from United States railroads, or less than 2 per cent of the total traffic carried by the railroads of the Eastern district in 1928. The loss of revenues involved would clearly not be a matter of vital concern to the railways."

It is also asserted that the rail carriers having their eastern termini at Lake Michigan or Lake Superior would not be adversely affected in any degree by the construction of the waterway, but on the contrary "the waterway would tend to render them independent of other groups of rail carriers," and if the new route proved effective as a carrier it would tend to better the economic condition of the Northwest.

As far as Canada is concerned "in any event it is unnecessary for Canada to build a waterway for the express purpose of regulating railroad rates" because the Canadian government, through its Railway Commission, has adequate control over the railway rate structure of the country throughout the year. It is also declared that the St. Lawrence waterway would tend to increase the financial difficulties of Canadian railways and that if the effect should be to reduce earnings on the eastern lines so as to raise rates in western Canada, the difficulty of obtaining ultimate relief for the railroads through an increased population and an enlarged volume of traffic would be increased.

Chapter X is a survey of the economic possibilities of the hydroelectric developments that have been projected. It is stated that in none of the official reports on the project has there been an analysis of the economics of the power phase of the subject, but on the basis of an investigation made on a straight commercial basis by the engineering firm of Sanderson & Porter, whose report is presented in full in an appendix, the conclusion is reached that "the proceeds from the sale of this power, when transmitted over an independent transmission system, would not cover the costs involved for the United States government."

"The conclusion indicated by the foregoing analysis is that from the standpoint of neither the United States nor Canada is great haste required in the development of the power resources of the St. Lawrence river. That this power will eventually be exploited and utilized on an economical basis as scarcely to be doubted. Just how rapidly the necessary industrial development along the river will come, no one is in a position at the present time to forecast."

In appendices are given the correspondence between the United States and Canadian governments, a schedule of sailings in the north Atlantic trades, an appraisal of traffic analyses made by others, detailed analyses of the various commodities which might be expected to be transported, and the engineering report by Sanderson & Porter on the development and utilization of the power.



## Car Service Division Reports on Conditions

**F**REIGHT traffic handled so far this year by the railroads has been the greatest ever carried by them in any similar period and there are indications of a continuation of heavy freight movement, although possibly not in record proportions, for the remainder of the year, according to a report submitted at a meeting July 25 at Atlantic City of the board of directors of the American Railway Association, by M. J. Gormley, chairman of the Car Service Division.

Despite the heavy traffic which the railroads have handled up to the present and the heavy movement which always comes in the fall months, according to the report, the car supply is considered ample to meet requirements not only as to grain shipments but also other commodities.

Actual loading of revenue freight for the first 27 weeks this year amounted to 26,505,770 cars, an increase of 4.7 per cent above the same period in 1928 and an increase of six-tenths of one per cent above 1927. It also was an increase of 359,743 cars above the estimate for that period made last spring by the Car Service Division, which at the same time estimated that total loading for the year 1929 would amount to 25,553,813 cars, compared with 51,576,731 cars actually loaded in 1928.

Condition of locomotives on July 1 was the best ever reported in recent years. There were also fewer freight cars in need of repair on July 1 this year than on any similar date in the past seven years with the exception of July 1, 1927, when freight car conditions were slightly better.

Regarding the heavy crop movement this year, the report said in part:

"Owing to the rapid maturing of the crop, the grain movement from the southwest began in heavy volume around June 25, somewhat earlier than it did a year ago. The Santa Fe, by reason of its location and extent of line, handles the largest volume of any southwestern wheat carrier. Last year that road established a record by loading 1,885 cars of grain in one day. So far this season, that road has broken last year's record four times, the latest peak day having been 2,124 cars. For the first 17 days in July, the average loading for that road has been 1,700 cars per day or an average of about 90 per cent of last year's peak day. These figures are given to indicate the almost incredible increase in the volume of wheat thrown onto the railroads in the southwest by reason of continued extension of the use of the combine harvester, trucks and other farm machinery. Other railroads in the same territory have also experienced extremely heavy loading, but not entirely in the same degree due to difference in local conditions particularly the falling off in the crop in Oklahoma and Kansas.

"The southwestern railroads began the season with a large surplus of empty box cars suitable for grain loading, but by reason of the delayed movement of the old crop and a high average of general business it was impossible to accumulate quite as large a surplus as a year ago. There have been some more or less serious car shortages, particularly in southwestern Kansas during the past ten days, due in part to a disastrous flood which cut the lines of the Rock Island, Santa Fe and Missouri Pacific and delayed operations quite seriously.

"All connections of the southwestern roads have been

cooperating voluntarily on the delivery of empty box cars to the roads serving this territory.

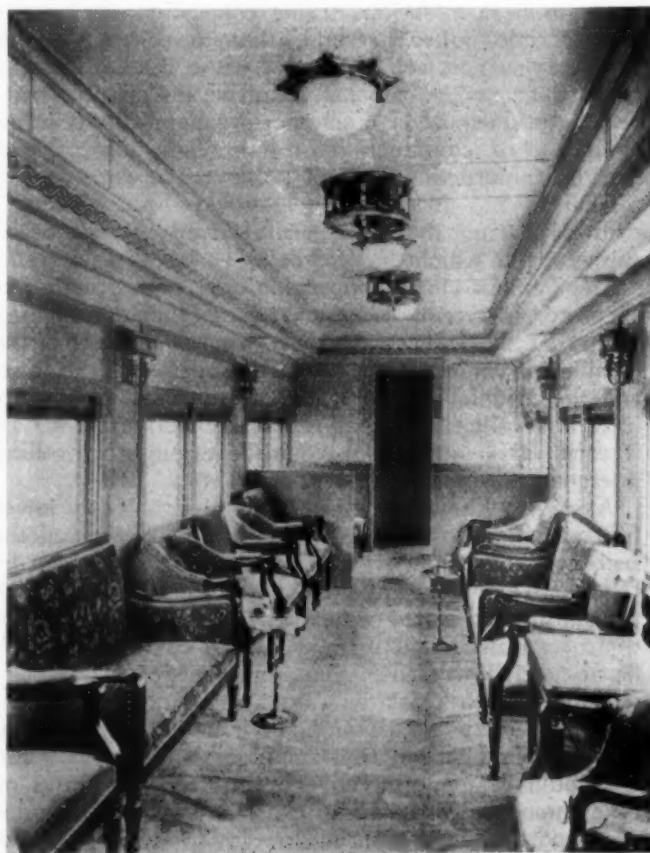
"Normally at this season of the year there is a heavy movement of grain to Galveston for export and a corresponding demand by foreign purchasers. We have had this year a heavy movement to Galveston of new grain, particularly from Texas, where the crop was large. Unfortunately, conditions in the grain market have not been favorable to a prompt movement to export and the result is an accumulation of grain, which now amounts to something over 4,000 cars at Galveston and 3,000 more in transit, with local elevators practically full. This has made necessary the placing of an embargo, which prevents any further loading or re-shipment of grain to this port. The embargo will remain in effect until the accumulation is relieved.

"Reports indicate a comparatively light crop of wheat in the northwestern spring wheat states and it is not anticipated that the transportation lines will have any difficulty handling the traffic in that territory, even though there is a considerable accumulation of old grain at terminal markets. It is believed that the higher grain prices now prevailing will move considerable of this old grain and it is felt there will be ample room and car supply to take care of the new crop."

Despite a heavier demand this year than last for coal cars and other open-top equipment, the report said the car supply will be ample to protect adequately all requirements. This also holds true, according to the report, for refrigerator cars.

At the meeting, J. J. Bernet, president of the Chesapeake & Ohio, Pere Marquette and Hocking Valley, was elected an ex-officio member of the board of directors.

\* \* \*



Interior of Club-Lounge Car on Wabash Midnight Trains  
Between St. Louis and Kansas City and St.  
Louis and Chicago



Commissioner McManamy

# Transportation of Private Cars Must Be Paid For

*I. C. C. adopts findings recommended  
by Commissioner McManamy*

THE Interstate Commerce Commission on July 18 made public its report on its investigation of the use of private passenger train cars, making the findings recommended by Commissioner McManamy in a proposed report a year ago that the transportation of private cars on foreign lines should be paid for through the assessment of a "just and reasonable charge."

With three commissioners, Brainerd, Woodlock and Porter, dissenting in part, because the report was issued without a hearing, the commission finds that:

"The transportation or movement of private passenger cars, including so-called office cars, by one carrier for another or its officials, free or at other than published tariff rates is contrary to the provisions of the interstate commerce act.

"It is unjustly discriminatory and unduly preferential and prejudicial to haul such private cars of other carriers free, or at less than published tariff rates, while charging certain minimum fares and revenue for the movement of privately owned or chartered cars.

"The transportation of persons in private passenger cars, including berth and other accommodations, at the rate charged passengers provided only with ordinary coach accommodations is unjustly discriminatory and unduly preferential and prejudicial."

The report, by Commissioner McManamy, repeats the statistical information regarding the use of private cars and the criticisms of the practices followed which were included in the proposed report made public July 23, 1928, which was abstracted in the *Railway Age* of July 28, 1928, page 156. It also analyzes and answers the exceptions to the proposed report filed on behalf of the Association of Railway Executives and the Chicago & Eastern Illinois, which were made the subject of oral argument before the commission. The report says the carriers "will be expected to cease and desist from the violations of the act herein found, but in view of the penalties provided for such violations, no order appears to be necessary."

Commissioner McManamy says there is no more reason for construing the failure of the commission in the past to declare unlawful the practice of hauling cars of other carriers free as approving the practice, than there is for construing the failure of the executives to correct the long-existing abuses as approving them, and that "after observing our finding . . . the executives will

still have a duty to perform in eliminating unnecessary use of private cars and in thereby promoting efficient and economical management as contemplated by the act."

An abstract of that part of the report which discusses the exceptions taken to the proposed report, and Commissioner Brainerd's opinion, follows:

The principal opposition to the proposed report came from the Association of Railway Executives. It is argued on behalf of this association that the free carriage of railway officials and employees authorized by the act includes a private car of another line occupied by one or more of them. In support thereof it is urged that such free carriage is universally recognized as not confined to the persons but includes their baggage, although baggage is property and the act does not specifically authorize its free transportation.

## Not Analogous to Baggage

Baggage is usually transported without charge in addition to the passenger's fare, subject to certain restrictions as to weight and other matters. While the transportation of baggage may be spoken of as free, it is in reality covered by the passenger's fare. The property which may thus be transported without separate charge is defined in the tariffs, and when the weight permitted is exceeded separate charges are provided. Naturally, a person traveling on a pass is generally accorded the same baggage privileges as other passengers, and apparently he would have to pay the same charges as others on excess weight. There are other limitations on the property which may be transported as baggage without separate charge; for example, such charges are often provided on bicycles and baby carriages. While the transportation of a private car may be in a sense incidental to the transportation of the persons riding therein, the use of such cars is certainly not so general that they may be considered an ordinary or necessary incident to the transportation of the passengers, as in the case of baggage. It seems clear from the foregoing that the free transportation of a private car can not be justified upon the same principle as the transportation of baggage.

As a matter of fact, the baggage tariffs specifically prohibit the checking of numerous articles which are commonly included in private cars, such as chinaware, foodstuffs, and furniture. Not only that but such articles beyond question would be subject to charges if shipped by freight or express. It is strange indeed if a railroad official is entitled to have articles transported free in a private car which could not be checked and would be subject to charges if shipped in any other manner.

In our view it is too far-fetched to say that because a person lawfully entitled to use a pass may have transported free a limited amount of baggage he may also bring and have transported free a private car embracing a kitchen, dining room, stateroom, sitting room, and necessary equipment, supplies, and attendants. According to the views advanced on behalf of the railway executives the family, relatives, and friends of the official or employee in charge of the private car being

WASHINGTON, D. C.



transported free may without objection likewise be accommodated therein. And when the car is no longer needed it may, under their interpretation, be sent over foreign lines to its home station without charge, or if the car is at its home station and is desired elsewhere on foreign lines for use it may be brought without expense. Free transportation is contrary to the general policy of the act and the definiteness and clarity with which Congress has specified the extent to which free transportation may be afforded by carriers subject to the act precludes the construction which counsel would have us place upon the pass provisions thereof.

The argument of the Association of Railway Executives that the carriers may lawfully haul the private cars of other lines without charge is also predicated on the theory that such a car is an instrumentality of commerce rather than an article of commerce. We are thus brought to a consideration of the question of when railway equipment generally may be transported without charge. Of course, a carrier may transport its own property without the payment of tariff charges. It would serve no useful purpose to require a carrier to transfer money from one pocket to another in payment of charges. Likewise, property which a carrier has hired or rented for the performance of its common-carrier duties may be transported the same as property which it owns. It is well known that freight cars and to some extent passenger cars move freely over foreign lines, and it may be helpful to consider the terms on which such cars are handled.

### Other Cars

Freight cars in service are generally interchanged between the principal carriers throughout the country under rules of the American Railway Association. The carrier in possession of the car pays the owning line a certain amount for each day the car is on its line. It is paid whether the car is loaded or empty, as the empty movement is considered incidental to the loaded movement, and the carrier in possession may permit an empty car to be loaded with revenue freight. This use of the freight cars of another carrier relieves the carrier in possession of the burden of furnishing its own equipment, which is a distinct benefit, and it participates in the revenue from the freight. Freight cars in regular service are not subject to transportation charges but such cars are subject to charges when the transportation is not in regular service. The consolidated classification provides certain charges per car per mile for the transportation of all kinds of railway equipment on their own wheels. For example, dining, parlor, and sleeping cars are charged from 23 to 30 cents per mile in the various territories. These charges apply on new cars moving from the place of manufacture to the home line before being placed in service, also on cars moving empty to and from repair shops off the home line, and on any other movements over foreign lines not in regular service. Apparently a car is in service when it is under load or has carried a load and is returning or seeking another load. In other words, so long as a car is being handled for revenue purposes, it is in service and not subject to charges; but when it is transported solely for the benefit of the owning line, the latter must pay for such transportation on another line.

Privately owned freight cars are also used by the carriers in transporting property of the owners. An allowance of so much per mile is paid by the carrier to the owner for the use of the car. This is based on the empty as well as the loaded movement, but if the empty movement exceeds the loaded movement the mileage allowance on the excess must be refunded, and in addition charges are assessed for the transportation of the car. Otherwise, no charge is made for the handling of a privately owned car in service, as its use benefits the carrier and is for revenue purposes.

Passenger cars of one carrier are sometimes operated over the lines of other carriers in maintaining through service. The terms on which this is done are a matter of contract, but in the absence of other arrangement the owning line is paid certain amounts per mile or per diem under rules of the American Railway Association. As in the case of freight cars, no charges are assessed for the handling of cars in service, but cars not in service are subject to the charges in the consolidated classification. The criterion for determining when a passenger car is in service would seem to be the same as in the case of a freight car; that is, whether the car is being handled for revenue purposes in the interest of all the carriers in the through route or solely for the benefit of the owning line.

Special, privately owned, or chartered cars for the exclusive use of special parties are transported in passenger trains under tariffs which provide for certain minimum revenues. In the case of sleeping and parlor cars, charges for a one-way move-

ment are based on the authorized fare for each passenger, with a minimum of 25 adult fares, but not less than \$42 for the car and party. The charges for a round-trip movement are similar, except the 25 fares are doubled or must be for the round trip, and the minimum revenue is \$84. In either case, the surcharge must be paid for each passenger, with a minimum of 25 surcharges, but this is not used in computing the minimum revenue per car. When a car is moved empty or in charge of porter or other attendants, charges are assessed on the basis of 10 regular adult one-way fares, plus the authorized fare for each porter or attendant, except not more than three employees of common carriers may be carried free. In this case also the minimum revenue is \$42, including fares of attendants, but the surcharge is not collected. In some of the tariffs the charges for empty movements apply to carrier-owned as well as privately owned equipment. The tariffs also provide for application of the minimum fares and revenue on carrier-owned cars equipped for certain special purposes, such as advertising, exhibition, instruction, and the like. These are the provisions generally in effect, although there may be variations on individual lines.

The term privately owned cars is not defined in the tariffs, but its obvious meaning is cars owned by others than the carriers. Apparently a private car owned by an individual even though a railroad official would be subject to the tariff charges on privately owned cars. It would seem that if a railroad official must pay to have his own car moved, the free transportation of his person authorized by the act could hardly be deemed to include a private car owned by his company.

It will be seen from the foregoing that tariff charges are provided for the transportation in freight trains of both carrier and privately owned cars of all kinds, when they are handled solely for the benefit of the owner and not for revenue purposes. It would not be seriously urged that such transportation could be rendered free if an attendant or other person having a pass should ride in the car. The tariffs also provide minimum charges for the transportation in passenger trains of special, privately owned, or chartered cars for the exclusive use of special parties. Apparently these minimum charges would not be lessened or affected in any way if a person or persons having passes should ride in the car. All of these charges show that there is nothing in the nature of railway equipment which justifies its transportation without charge, except when it is being handled for revenue purposes in the interest of the carrier performing the service. Even then the revenue from a passenger car used exclusively by a special party must be sufficient to warrant its transportation.

The propriety of tariff charges for the movement of railway equipment on its own wheels has been recognized by us in numerous cases. In two of them in fact we found that the charges assessed on freight cars were applicable even though they were transported under load. *Pacific Engineering & Construction Co. v. C., R. I. & P. Ry. Co.*, *supra*; *McCloud River Ry. Co. v. S. P. Co.*, 56 I. C. C. 287. Although charges are not generally assessed on cars under load, the charges assessed in the cases cited were upheld on the ground that the carriers had never agreed to accept the cars in interchange service. It was recognized that loaded cars are presumed to have been accepted in interchange service, but this presumption was found to have been overcome under the circumstances of these cases. Stated in another way, the charges were found applicable because the carriers had not hired the cars and they did not pay the usual mileage allowance for their use. In a more recent case we found that the charges assessed on certain cars hauled under load were not applicable because the cars had been accepted in interchange service and the mileage allowance was paid for their use. *Haffner Thrall Car Co. v. N. P. Ry. Co.*, 146 I. C. C. 47. The theory underlying these decisions is that a carrier may not assess charges on a car which it has hired the use of, but it may and should assess charges when it has not hired the use of the car even though it is hauled under load.

The transportation of a private car of another carrier is ordinarily for the benefit of the owning line or its officials and not for revenue purposes. While ticket passengers may sometimes occupy such a car, they do so by invitation, and the carrier performing the transportation is not at liberty to make use of the car by putting other passengers in it. The returns to our questionnaire indicate that it is seldom, if ever, that the number of ticket passengers is sufficient to make the hauling of the private car of another carrier profitable to the carrier performing the service. This is further indicated by the additional fact that such passengers apparently do not pay the surcharge, which is assessed on persons riding in Pullman and privately owned or chartered cars. Indeed, the few ticket passengers sometimes riding in the private car of another carrier could probably be accommodated in other equipment that must be

hauled anyhow, and the transporting carrier would receive more revenue if they rode in an ordinary Pullman car. Under these circumstances a carrier hauling the private car of another line can not be said to have hired its use, as it would have no interest in doing so and pays no rental therefor. Even if car hire should be provided on private cars, it would obviously be a mere subterfuge which could not change the legality of the practice. Our conclusion is that the transportation of the private car of another carrier is not of such advantage to the carrier performing the service as to warrant its performance without charge, on the same principle as the free handling of revenue-producing equipment.

### A Long Standing Practice

The Association of Railway Executives asserts that the carriers have always hauled the private cars of other lines without charge, that this practice has been well known to the commission, and that we have expressly approved it. It is contended, therefore, that we have interpreted the act as permitting the practice, and cases are cited to the effect that such an administrative interpretation is entitled to considerable weight where it is long continued and uniform.

In support of this contention it is pointed out that our conference ruling No. 95 and our pass regulations of 1917 both prescribed a form of pass for railway officials and employees which included the word "car." Of course, such a pass would be proper for the movement of a home-line private car, and it is understood that the practice is to issue passes for such cars, at least on some lines. But the Association of Railway Executives urges that the form of pass prescribed applied to foreign-line cars, since it provided for naming the carrier, which was not required in the case of a pass for the officers or employees of the home line. The form of pass does not specifically indicate whether it is for home or foreign-line cars or both. It might in fact be construed as including any kind of a car, even though subject to tariff charges. Under these circumstances we think that the pass form should be given a construction in harmony with the law. Certainly we never intended to approve the practice of issuing passes for the private cars of other lines. However, our conference rulings have all been canceled, and our pass regulations will be amended so as to make clear that a car pass may be issued only for home-line cars.

It is also argued that where our pass regulations refer to passes for sleeping, parlor, and other accommodations, the words in italic include a private car of another line. We think those words were meant to cover such similar accommodations as a stateroom or berth on a steamer. A private car of another line can be regarded as an accommodation furnished by the carrier issuing the pass. We do not see how the words in question can be given the construction sought.

Our attention is not directed to any decision of a formal or informal nature in which we have approved the practice of handling private cars of other lines without charge, and diligent search has failed to disclose any such decision. In two cases we referred to the use of "car and party" passes by officers of so-called tap lines or industrial lines as being improper and unlawful. *The Tap Line Case*, 23 I. C. C. 277, 298; *Colorado Free Pass Investigation*, 26 I. C. C. 491, 494. The only other case in which any consideration has heretofore been given to the free transportation of private cars was *The Five Per Cent case*, 31 I. C. C. 351. At page 410 of that report we referred to revenue which the carriers might have derived by charging tariff rates on private cars handled free. In effect we told the carriers that they should look to this among other means of increasing their revenues, but apparently they have not heeded our recommendation. The lawfulness of the practice was not brought in issue and was not passed upon in that proceeding. Clearly we have never ruled that private cars may lawfully be transported without charge for other carriers or their officials.

It may be assumed that the practice of hauling the private cars of other lines without charge prevailed at the time of the passage of the act to regulate commerce. That, however, does not indicate an intention on the part of Congress to permit the practice, since, as stated in our third annual report, the law aimed at the correction of the abuses of free transportation. Nor can the long existence of the practice of issuing passes, for foreign-line private cars be regarded as legalizing it. As previously stated, in *American Express Co. v. United States*, *supra*, the Supreme Court held that an express company could not lawfully issue franks to certain classes of persons for the transportation of property, notwithstanding the contention that the custom of issuing such franks was one of long standing and no protest against the practice had been made to or by the commission. This is the first time that the lawfulness of the practice of issuing passes for foreign-line private cars has been

brought in issue before us. Of course, good faith might be urged in defense of past violations, but obviously it could not be so urged in respect of a violation after the law has been construed by this commission.

It is urged that while the practice of transporting foreign-line private cars without charge is lawful our investigation has shown that the courtesy extended as between roads has in some instances been abused. It is proposed to correct such abuses by the adoption of a code of ethics limiting such courtesies and calling for reports to be rendered covering the movement of private cars on foreign lines. Counsel stresses the point that although the practice of transporting private cars without charge is of long standing we have not declared it unlawful. As previously stated, this is the first time the legality of the practice has been before us for decision. Apparently it is the first time the practice has been given serious consideration by the Association of Railway Executives since only after our investigation were the abuses of what they term a lawful courtesy discovered. There is no more reason for construing our failure to declare the practice unlawful as approving the practice, than there is for construing the failure of the executives to correct the long-existing abuses as approving them. After observing our finding that the transportation of private cars over foreign lines should be paid for through the assessment of a just and reasonable charge the executives will still have a duty to perform in eliminating unnecessary use of private cars and in thereby promoting efficient and economical management as contemplated by the act.

### The C. & E. I. Argument

The Chicago & Eastern Illinois was the only carrier which filed exceptions to the proposed report. It urges that the assessment of charges for the movement of private cars over foreign lines would handicap it in the solicitation of traffic in the Southeast and Southwest. This line is a part of through routes to and from points in those territories which it can reach only over the rails of its connections, while certain competitors such as the Illinois Central and the Santa Fe extend all the way to many of the important southeastern or southwestern points. Apparently the Chicago & Eastern Illinois has been sending its private cars over the lines of its competitors as well as other carriers for the purpose of soliciting traffic in their territory. It is not clear why the use of private cars is so important in the solicitation of traffic, which is ordinarily handled by traffic representatives, such as this line has at various points in the Southeast and Southwest. During the three years covered by our questionnaire, the private cars of the Chicago & Eastern Illinois traveled 28,274 miles on foreign lines, while it hauled the private cars of other carriers 44,223 miles. The assessment of reasonable charges for such movements would, therefore, have been to the advantage of this carrier.

### Reciprocity No Justification

Reciprocity between carriers is no justification for the free transportation of private cars. It will be observed that railway equipment generally which is not in revenue service is not handled on that principle, and it could not be so handled lawfully. Moreover, the returns to our questionnaire show that there is seldom a fair balance between the service performed by different carriers in transporting the private cars of each other. On the contrary, the returns show that there is often a wide difference in the relative amount of service performed in hauling such cars. No one has contended that the theory of reciprocity warrants the free handling of private cars. Transportation must be paid for in cash and not in commodities or services. *In re Contracts for Free Transportation*, 16 I. C. C. 246; *United States v. C. I. & L. Ry. Co.*, 163 Fed. 114; *Louisville & Nashville R. R. Co. v. Mottley*, 219 U. S. 270.

As heretofore pointed out, the tariffs provide certain minimum fares and revenues for the movement of special, privately owned, or chartered cars, which are evidently intended to cover the service of transporting the car. This is apparent from the fact that the charges are the same whether the car is occupied by 1 passenger or 25. Especially in the case of cars moving empty or in charge of porter, it is manifest that the minimum fares and revenue are intended to compensate for the movement of the car rather than its contents. Apparently the only material difference between the cars on which these minimum charges apply and the private cars of other carriers is the matter of who owns or is using them. In so far as these charges do not apply to the private cars of other carriers, they are unjustly discriminatory and unduly preferential and prejudicial. See *In the Matter of Restricted Rates*, 20 I. C. C. 426, wherein it was found in violation of



sections 2 and 3 to charge less for the transportation of railway coal than the rates charged on commercial coal. This decision was upheld by the Supreme Court in *Int. Com. Com. v. Balt. & Ohio R. R.*, *supra*.

We find that the transportation or movement of private passenger cars, including so-called office cars, by one carrier for another or its officials, free or at other than published tariff rates is contrary to the provisions of the interstate commerce act. The assessment of a just and reasonable charge by carriers transporting private cars for others, and for services rendered in connection therewith, is not only required by the act but will be in keeping with efficient and economical management.

This finding does not extend to the point of saying that it is unlawful for private cars of one carrier to be transported over the lines of other carriers, but is confined to the assertion that under existing law the transportation of private cars on foreign lines should be paid for through the assessment of a just and reasonable charge.

### Discrimination

As shown in Appendix A, a substantial percentage of the occupants of private cars hauled free, or at less than tariff rates, were business associates, relatives, or friends holding tickets which entitled them only to transportation in the ordinary coach. A total of 22,391 passenger-miles were traveled by such persons in private cars of the Nickel Plate and a total of 208,203 passenger-miles were traveled by such persons in private cars of the Chicago, Rock Island & Pacific during the three-year period. The returns of other carriers show similar travel.

Carriers according passengers the comforts and facilities of private cars, including berth and other accommodations, are treating unequally and unfairly the passengers accorded the ordinary coach facilities but who are charged at the same rate as those traveling in private cars, and they also discriminate against those who pay the surcharge for riding in ordinary sleeping or parlor cars and privately owned or chartered cars.

The Association of Railway Executives urges that the question of whether it is unjustly discriminatory and unduly prejudicial to furnish private-car accommodations to invited guests without charge depends upon the circumstances of each individual case. They seem to think that circumstances may warrant the furnishing of a berth and other accommodations in a private car without charge, provided only that the passenger has purchased a ticket entitling him to passage. We are unable to see how a berth or other accommodations for which a tariff charge is usually made can be furnished free any more than a passenger can be carried without charge. A carrier which furnishes free a berth or other accommodations in a private car similar to those for which tariff charges would be assessed if the passenger rode in a Pullman car is clearly guilty of violating section 6 of the act.

It is suggested that the furnishing of a berth or other accommodations in a private car is merely a courtesy extended by one passenger to another. The furnishing of a berth or other accommodations in a Pullman or private car without charge to a person not lawfully entitled to free transportation is just as clear a violation of the spirit and plain intent of the act as carriage without the purchase of a coach ticket.

The railway executives further urge that a hearing must be held in each individual case to determine whether the circumstances and conditions are so similar as to warrant an order requiring the removal of the discrimination and prejudice. This argument sounds like that made by the carriers soon after the passage of the act to regulate commerce. It was contended then that a difference in circumstances and conditions warranted the issuance of passes to certain classes of persons, such as public officials. That contention was rejected in *In Re Persons Free or at Reduced Rates by B. & M. R. R. Co.*, 5 I. C. C. 69, 78; and *William H. Harvey v. Louisville & Nashville R. R. Co.*, 5 I. C. C. 15.

One of the fundamental purposes of the act is "to compel the carrier as a public agent to give equal terms to all" and "to cut up by the roots every form of discrimination, favoritism, and inequality." *New Haven R. R. v. I. C. C.*, 200 U. S. 361; *L. & N. v. Mottley*, 219 U. S. 467; *U. S. v. Union Stock Yard*, 226 U. S. 286.

We further find that the transportation of persons in private passenger cars, including berth and other accommodations for which a charge is made in Pullman cars, at the rate charged passengers provided only with ordinary coach accommodations is unjustly discriminatory, unduly preferential of the former, and unduly prejudicial to the latter as well as those who pay the surcharge for riding in ordinary sleeping or parlor cars and privately owned or chartered cars.

The carriers will be expected to cease and desist from the

violations of the act herein found, but in view of the penalties provided such violations, no order appears to be necessary.

BRAINERD, *Commissioner*, dissenting in part:

The majority's decision is based upon information obtained by the commission from returns made to a questionnaire sent to Class I and II carriers. No hearing has been held and no opportunity for the introduction of evidence or the examination or cross-examination of witnesses has been granted. This report is adopted over the carriers' exceptions based in part upon a failure to accord them a full hearing. While I concur in much if not all that is said by the majority, I do not wish to be understood as approving the practice of adopting formal reports containing findings of fact or conclusions of law based upon an investigation, whether upon our own motion or otherwise, without having first held a hearing at which all parties have been afforded an opportunity to introduce evidence and examine and cross-examine witnesses in such manner as may be necessary to conform to the requirements of due process of law. The more liberal the practice, the more imperative the obligation to preserve the essential rules by which rights are determined.

I am authorized to state that COMMISSIONERS WOODLOCK and PORTER concur in the views herein expressed.

## I. C. C. To Investigate Reciprocity Buying

WASHINGTON, D. C.

THE Interstate Commerce Commission on July 24 let it be known that it had been giving consideration to the subject, which has also received considerable attention in railroad and railroad supply circles recently, of "reciprocity buying" and had decided to take official cognizance of the matter by ordering a formal proceeding of investigation.

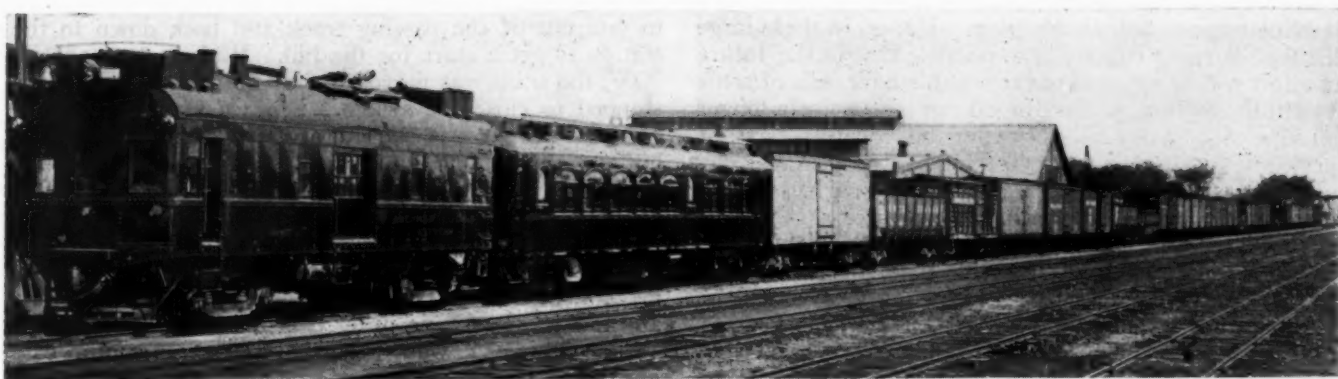
The order instituting the investigation, No. 22,455, dated as having been adopted at a general session of the commission on July 22, was adopted on the commission's own motion. It provides for an investigation "into and concerning the methods and practices employed by common carriers by railroad, subject to the interstate commerce act, in purchasing equipment, materials, supplies or other commodities or articles, with particular reference to the extent, if any, to which such purchase from any manufacturer, producer or dealer is dependent upon or influenced by the routing of traffic controlled directly or indirectly by such concern via the line or lines of the purchasing carrier, with a view to making such order or orders, or taking such other action in the premises as may be warranted by the record."

All common carriers by railroad subject to the interstate commerce act are made respondents and the proceeding is ordered to be assigned for hearing at such times and places as the commission may hereafter direct.

The commission has had its attention called in many ways and upon many occasions for a long time to the practices of certain shippers or interests in control of companies or groups of companies controlling a large freight tonnage of bringing pressure to bear upon the railroads to purchase supplies in the sale of which they were interested. It has also heard of railroads buying supplies from companies in a position to or willing to route traffic via the line of the railroad concerned, rather than from other companies.

It is understood, also, that complaints are sometimes addressed to the commission by representatives of companies who have not succeeded in selling their products to certain railroads and who have been inclined to accept as the only reason the fact that a competitor has given the railroad more business.

The commission has, however, made only railroad companies respondents because it has jurisdiction over them.



Rock Island 800-Hp. Rail Motor Car Hauling a Test Train in Freight Service

## Rock Island Tests Powerful Rail Motor Cars

*Each car equipped with two 400-hp. gas-electric power plants arranged to burn distillate fuel*

THE Chicago, Rock Island & Pacific has recently placed in service three new 800-hp., dual-power-plant, distillate-burning, gas-electric motor cars, constituting the most powerful cars of this type yet constructed. The cars, built at the Horton (Kans.) shops of the Rock Island from specifications developed in the office of E. Wanamaker, electrical engineer, consist of converted 40-ft. steel mail cars, for which there was no longer an economic demand, equipped with two Winton eight-cylinder gas engines per car, each designed to develop 400 brake hp. at 900 r.p.m. The power plants and control apparatus were furnished by the Electro-Motive Company, Cleveland, Ohio, and the electrical equipment by the General Electric Company.

When used in freight service, these rail motor cars are geared to pull a freight train of 800 gross tons up a one per cent grade at eight miles an hour, or 37 miles an hour on level track. In passenger service they will haul to a total of 260 tons, based on four trailing cars, in fast service. The trucks are equipped with Hyatt roller bearings. Each car carries two fuel tanks of 300-gal. capacity and is equipped with a hot-water heating plant for cold weather service.

### Test Results Secured

In an official test on April 20, at which representatives of 16 railroads were present, one of these motor cars, No. 9007, was operated in local freight service between St. Joseph, Mo., and Topeka, Kans., on Rock Island train No. 81. The log of the test run is shown in Table I and a summary of results in Table II. The striking fact about this test was the handling of 82,441.6 ton-miles with a total fuel consumption of only 350 gal. of distillate at the rate of 3.4 gal. per mile, or one gal. for 263 ton-miles, exclusive of switching.

This same motor car, No. 9007, was tested in passenger service on Trains 439 and 440, between St. Joseph, Mo., and Topeka, Kans., on April 26 and April 27. The capacity performance in passenger service was some-

what similar to that made by Rock Island 1300-class, 10-wheel, saturated, piston-valve locomotives, having cylinders 21 in. by 36 in., driving wheel diameter of 68 $\frac{3}{4}$  in., and boiler pressure, 190 lb. The total weight of engine and tender in working order is 145 tons.

On the test runs, the motor car made a more creditable performance than the 1300-class passenger power. In other words, it was easier to make up delayed time with the motor cars than with the locomotives.

Both out of St. Joseph and Horton, the loads in the freight test were placed at the rear of the train and empties next to the motor car, making a heavier drag on the curves than would have obtained had the loads been near the motor car. A Rock Island standard steel coach just out of Horton shops, weighing 71 tons, was coupled in next to the motor car for the convenience of those witnessing the test, the rear door in the motor car making it possible to pass back and forth between the motor car and the coach.

The engines operated at a temperature of approximately 185 deg. F. under the heaviest load conditions, which indicates ample capacity for cooling. The lubricating-oil temperature did not exceed 162 deg. F. at any time after passing through the oil cooler. The passing of the oil through the oil cooler reduced the temperature from 172 deg. to 162 deg. F.

The lubricating oil consumed for the trip from St. Joseph to Topeka was 2 $\frac{1}{2}$  gal. for the No. 1 engine and 3 gal. for the No. 2 engine. The oil at the end of the run was analyzed and found to be in first class condition and fit for further service, there having been practically no dilution. As a matter of fact, this car has since been operated in regular passenger service on the St. Louis division on a 2,000-mile oil change, the change being made at that time because it was felt that the oil might become dirty and require cleaning. Insofar as its lubricating value is concerned, it was still in good and serviceable condition. Fifteen hundred miles is generally considered to be the safe limit for operating oil in



gasoline engines before changing. Hence, in these large distillate-burning engines it is possible that in the future an effort will be made to put renewable filter cells of some type in the oil line, so that the oil can be run for a longer mileage with safety. Lubricating oil for this class of service ranges in cost from 60 to 70 cents a gallon.

The crank-case drainage from these engines is reclaimed at a cost of approximately 7 cents a gal. The overhead, cost of handling, etc., equals 8 cents a gal., making a total cost for renewing, reclaiming and returning the oil to service, of 15 cents a gal. Rock Island reclaimed oil is said to have proved fully equal, and in most instances superior, to the original oil.

No spark plug or ignition trouble was experienced during the trip. The spark plugs have been in continuous service since the test, several thousand gal. of fuel having passed through the engines without spark-plug trouble of renewal. The total fuel consumption for the trip equalled 325 gal. of distillate fuel, and 25 gal. of gasoline, which was used in warming up the engines before beginning the trip.

#### Specifications of the Distillate Used

The Rock Island has been paying between three and four cents a gallon for this distillate fuel in tank cars on company tracks at Ponca City, Okla. The specifications call for complete absence of water or suspended matter; white or light straw color; negative doctor test; viscosity not higher than 34 sec., Saybolt Universal, at 100 deg. F.; distillation range, 5 per cent not over 375 deg. F., 20 per cent not over 425 deg. F., 50 per cent not over 450 deg. F., 90 per cent not over 550 deg. F., and end point not over 600 deg. F.; at least 95 per cent recovered after distillation; residue left in the flask after distillation shall not show an acid reaction; and not be over .3 per cent sulphur.

The one-per-cent grades between Holton and Mayetta were topped at eight miles an hour, with 851 gross tons trailing in 23 cars—10 loads, 11 empties, a coach and a caboose. The performance specification calls for handling 800 gross trailing tons in 17 cars—8 loads and 9 empties, on a one-per-cent grade at eight miles an hour.

At Holton, after station work and switching was done, a car of cinders was unloaded and the train placed on a passing track waiting for train No. 312. A passing-track switch is located at the bottom of a one per cent grade. With a steam locomotive, it is usually necessary

to pull out of the passing track and back down to the station to get a start for the hill. With motor car No. 9007, the train was moved out of the passing track and stopped to close the switch. From a standstill on the grade, the train was started, accelerated and topped the hill at eight miles an hour.

The performance in freight service was approximately equivalent to that received from Rock Island 1400-Class 10-wheel saturated, piston-valve locomotives having cylinders 20 in. by 28 in. driving wheel diameter of 64¾ in., boiler pressure 190 lb., and total weight of engine and tender in working order, 147½ tons.

Since this test was completed the three motor cars have been placed in regular passenger service as trains No. 23 and No. 24 between Eldon and St. Louis, Mo., and trains No. 33 and No. 34 between Belleville and Goodland, Kans., where they have more than made the specification performance requirements by quite a large margin.

The motor cars weighed 89.9 tons when completed. When loaded with 600 gal. of distillate, 60 gal. of gasoline, lubricating oil, cooling water, heating-system water, heater fuel, sand, etc., ready for service, they weighed 93.9 tons each. The dimensions are: Length over end posts, 42 ft. 8¾ in.; width, 10 ft.; height, 15 ft.; 6 in.; total wheel base, 33 ft. 4¾ in.; truck wheel base, 7 ft. 8 in.; size of wheels, 36 in. in diameter, size of axles, 6 in. by 11 in.; gear ratio in freight service, 62:14; gear ratio in passenger service, 56:20.

Motor car No. 9007 was equipped with a freight gear for testing purposes, later being equipped with passenger gear. In freight service, the free running speed was 37 miles an hour, and in passenger service, 60 miles an hour.

Each of the two power plants are separate in every respect. The forward power plant supplies current for the two traction motors on the rear truck, and the rear power plant to the forward truck, to equalize the length of cable between the power plants and the trucks and secure good electrical balance.

Separate Type K manually-operated electric control is provided for each of the power plants; also throttle control. The two K controllers are connected together and are operated from one control handle, which is arranged to be as much like a locomotive control as possible. The one throttle operates both engines and is so interlocked with the K control that the K controller cannot be moved from the "off" position with the throttle

Table I—Log of Trial Run with Rock Island Local Freight Train No. 81 on April 26, between St. Joseph, Mo., and Topeka, Kans.

Stations	Distance between stations	Miles from St. Joe	Arrival time	Leaving time	Station time hrs. min.	Trailing tons in	Trailing tons out	Consist leaving		Remarks
								Loads—Empties (In addition to coach and caboose)		
St. Joseph .....	Start	0		7:39 a.m.	0:0		767	7	20	
Mo. River Bridge ..	.5	.5	7:43 a.m.	7:43 a.m.	0:0	767	767	7	20	
Elwood .....	1.2	1.7	7:48 a.m.	7:48 a.m.	0:0	767	767	7	20	
Wathens .....	3.9	5.6	7:59 a.m.	8:16 a.m.	0:17	767	787	7	21	
Blair .....	3.8	9.4	8:35 a.m.	8:35 a.m.	0:0	787	787	7	21	
Troy .....	4.7	14.1	9:11 a.m.	9:11 a.m.	0:0	787	787	7	21	
Bendena .....	5.7	19.8	9:31 a.m.	9:48 a.m.	0:17	787	755	6	21	17 min. switching.
Denton .....	4.9	24.7	10:05 a.m.	10:36 a.m.	0:31	755	772	6	22	15 min. switching; 16 min. meet 440
Purcell .....	5.0	29.7	11:02 a.m.	11:02 a.m.	0:0	772	772	6	22	
Pierce Jct. ....	4.5	34.2	11:15 a.m.	11:15 a.m.	0:0	772	772	6	22	
Horton .....	7.2	41.4	11:36 a.m.	12:48 p.m.	1:12	772	812	11	8	Lunch and made up new train.
Whiting .....	8.2	49.6	1:35 p.m.	1:46 p.m.	0:11	812	787	10	8	
Straight Creek ..	5.1	54.7	2:01 p.m.	2:06 p.m.	0:5	787	787	10	8	
Holton .....	6.0	60.7	2:40 p.m.	4:36 p.m.	1:56	787	851	10	11	48 min. switching unloaded car cinders and meet 312
Mayetta .....	9.3	70.0	5:25 p.m.	5:30 p.m.	0:5	851	851	10	11	
Hoyt .....	6.4	76.4	5:49 p.m.	6:02 p.m.	0:13	851	851	12	11	10 min. switching.
Elmont .....	6.2	82.6	6:17 p.m.	6:17 p.m.	0:0	916	916	12	11	
No. Topeka .....	6.9	89.5	6:35 p.m.	6:35 p.m.	0:0	916	916	12	11	
Topeka Yd. ....	1.2	90.7	6:45 p.m.	.....	0:0	916	...	12	11	

NOTE—The difference between the total mileage, 90.7, and the time-card mileage, 89.3, or 1.4 miles, is due to terminal or yard movement not included in time-card mileage.

open, nor can it be moved from the series position to the off position with the throttle open. This arrangement prevents the making or breaking of contacts while carrying heavy currents.

#### Power Furnished by Two 400-Hp. Engines

The prime movers used in the new Rock Island motor cars are the largest and the first eight-cylinder gas engines developed for this purpose. Each engine is of the straight-line, valve-in-head, heavy-duty type, with 8-in. bore and 10-in. stroke, governed to develop 400 hp. at 900 r.p.m. It has been designed for railway service only,

Table II—Summary of Results in Trial Local-Freight Run, St. Joseph, Mo., to Topeka, Kans.

Time on road	11 hr. 6 min.
Time required for station work	1 hr. 31 min.
Time required for switching, meeting trains and lunch	3 hr. 22 min.
Miles traveled	91
Miles switching (estimated)	12
Total miles	103
Fuel consumed	350 gal.
Fuel per mile	3.4 gal.
Fuel switching (av. 25 gal. per hr.)	37½ gal.
Ton-miles handled	82,441.6
Ton miles per gal., not including switching	263

without compromise for possible application to marine or stationary work. To conform with railway practice, U. S. Standard threads are used throughout except where fine threads are needed for adjustment.

The 4½-in. crankshaft is carried entirely on the lower half of the crankcase, the bearing caps being bolted down to the bearing bridges and the entire assembly of the crankshaft and its bearings being accessible from above through extra large doors in both sides of the "A" frame.

The camshaft is carried on nine bearings in the "A" frame and the water-jacket casting above the frame has an extended section which forms a support for the guides for the cam roller rams and also an enclosure for the push rods which carry the cam motion to the valve mechanism on the cylinder heads.

All engine auxiliaries such as water and oil pumps, starting air distributor, governor, ignition device, hydraulic throttle control and deadman's engine shut-down, are so mounted on the engine as to be entirely out of the way of inspection plates, crank-case doors and hand-hole covers. Any moving part of the engine and its aux-



Hyatt Roller Bearing Application—Removable Pedestal Jaw Permits Changing Wheels Without Jacking Up the Truck Frame

iliaries, with the exception of the timing gears, can be inspected or removed without disturbing other parts of the assembly. The carburetor and intake manifold are a single assembly and are on the opposite side of the engine from the exhaust outlets.

The entire engine design follows Diesel practice; no attempt has been made to lighten parts subject to bending or compression strains and all parts in tension are not only of large size, but are made of steel or alloys now recognized as the most reliable.

The carburetor is the Electro-Motive Company's Model 148, Type 4, which supplies a mixture of fuel and air to each pair of cylinders directly from the mixing throat, without passing through any manifold. This carburetor will handle gasoline or any distillate which can be burned in a gasoline engine without change or adjustment when shifting from one fuel to another.

The ignition system used was developed especially for this engine. It is a four-plug single-spark battery equipment, using 32-volt current in the primary circuit and having four independent secondary circuits. The common primary circuit insures absolute synchronism between the four spark plugs in each cylinder. In order to eliminate ignition as a possible cause of engine failure, all



New Rock Island 800-Hp. Rail Motor-Car Unit Being Tested in Passenger-Train Service



parts of the ignition system which affect the spark plug are in duplicate.

The engine cooling is controlled by using one, two or three sections of radiators and a fan for blowing, if necessary. During the test the radiator control valves were air-operated, with control valves at the engineman's position. Thermostatic control has been installed on one engine which automatically controls the air supply to the radiator control valves.

To insure an ample supply of air in freight service, two General Electric 100-cu.-ft.-per-min. air compressors are provided. During the freight test the air compressors operated 46 per cent of the time. Consideration is now being given to the use of a separate engine-operated air compressor for supplying the air, with possibly a generator for train lighting operated from the same unit. This would make possible greater economy and efficiency of such a unit as compared with the operation of the large engines at idling speed, or above idling speed with very light load, for pumping air at terminals, while drifting, etc. The use of a separate air-compressor unit will permit shutting down the power plants when not required for propelling the car.

## Freight Car Loading

WASHINGTON, D. C.

**R**EVENUE freight car loading in the week ended July 13 amounted to 1,064,632 cars, an increase of 39,707 cars as compared with the corresponding week of last year and an increase of 47,238 cars as compared with the corresponding week of 1927. All classes of commodities except livestock and forest products showed increases as compared with the corresponding weeks of both years, and all districts except the Southern made a similar showing. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

### Revenue Freight Car Loading

Week Ended Saturday, July 13, 1929

Districts	1929	1928	1927
Eastern	238,425	231,315	232,351
Allegheny	220,358	205,493	206,003

Pocahontas	59,616	54,602	58,650
Southern	138,308	138,590	149,803
Northwestern	168,039	158,709	157,446
Central Western	157,646	155,348	140,265
Southwestern	82,240	80,868	72,876
Total Western Districts	407,925	394,925	370,587
Total All Roads	1,064,632	1,024,925	1,017,394
Commodities			
Grain and Grain Products	59,428	53,521	42,702
Live Stock	24,723	25,205	27,458
Coal	156,803	148,964	152,978
Coke	11,526	8,801	9,660
Forest Products	60,540	61,058	66,933
Ore	78,622	65,983	66,121
Merchandise L. C. L.	256,754	253,776	255,859
Miscellaneous	416,236	407,617	395,683
July 13	1,064,632	1,024,925	1,017,394
July 6	908,832	850,947	839,085
June 29	1,095,724	1,003,699	1,021,438
June 22	1,069,046	987,360	1,018,060
June 15	1,069,089	1,002,813	1,016,479

Cumulative totals, 28 weeks...27,570,402 26,337,645 27,377,519

The freight car surplus for the period ended July 8 averaged 204,308 cars, a reduction of 13,349 as compared with the last week in June. The total included 106,090 box cars, 51,957 coal cars, 26,952 stock cars, and 13,199 refrigerator cars.

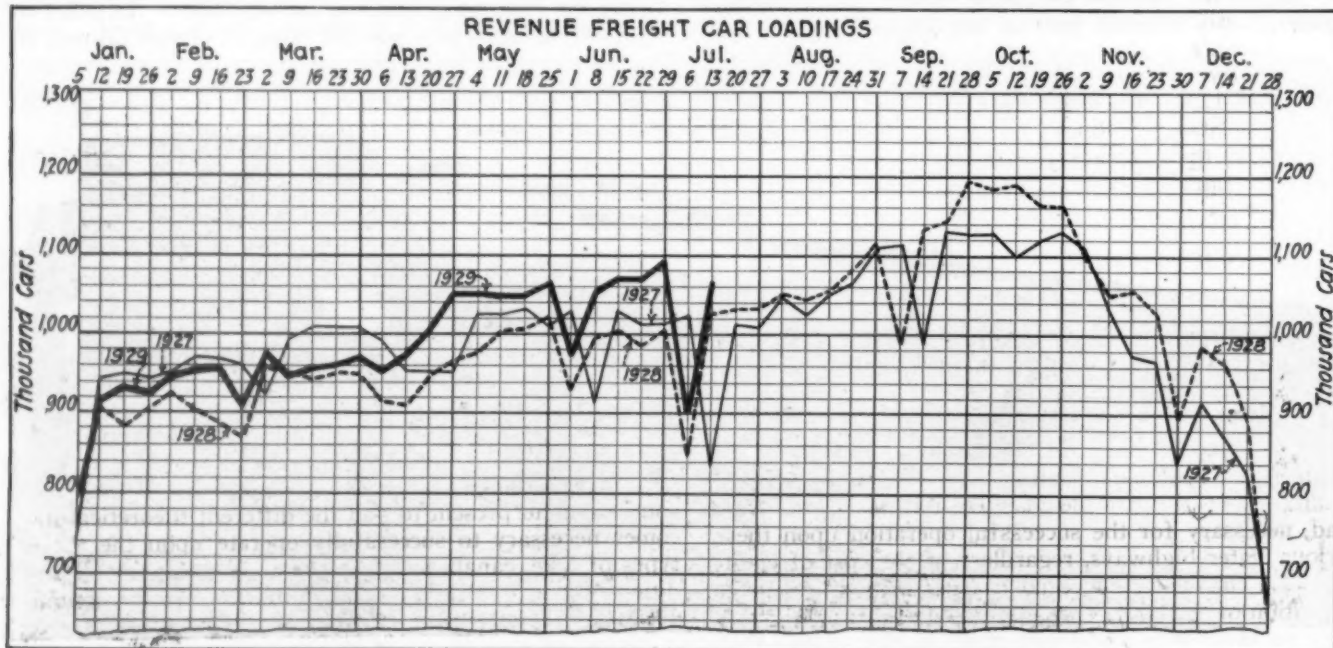
### Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended July 13 totalled 73,108 cars, an increase of 9,521 cars over the previous week and an increase of 4,102 cars over the same week last year.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
July 13, 1929	73,108	36,349
July 6, 1929	63,587	36,264
June 29, 1929	74,221	40,449
July 14, 1928	69,006	36,319
Cumulative Totals for Canada		
July 13, 1929	1,843,233	1,178,015
July 14, 1928	1,793,127	1,093,727
July 16, 1927	1,694,098	1,063,815

THE MISSOURI PACIFIC reports an increase of approximately 70 per cent in the interchange of freight traffic from Mexico and an increase of 21 per cent southbound during the month of June.

THE ILLINOIS CENTRAL, on July 1 started a "No exception" campaign for the month to promote the handling of carload and less-than-carload freight shipments expeditiously, and without loss or damage in transit.





A Typical Tow on Mississippi River Showing Barges Grouped About a Towboat

# Engineers Hear Divergent Views on Inland Waterways

*One session of A.S.C.E. meeting at Milwaukee devoted to economic and related problems of river transportation*

**H**OW thoroughly the advocates of inland waterway development are convinced of the necessity for and thorough success of transportation on rivers and canals in the United States was clearly evident in views expressed in papers presented before the summer meeting of the American Society of Civil Engineers at Milwaukee, Wis., last week. The only discordant note was a paper read by E. A. Hadley, chief engineer of the Missouri Pacific, on the Relation of Rail and Waterway Transportation in the United States, during the session devoted to the general subject of inland waterway transportation on Wednesday afternoon, July 10. Five other papers were also included on the program, of which one by General T. Q. Ashburn, chairman and executive, Inland Waterways Corporation, and another by L. D. Cornish, chief engineer, division of waterways, State of Illinois, had a direct bearing on the relations of the railways to the current promotion of waterway transportation. These two papers, as well as Mr. Hadley's, are reviewed in brief below:

## Progress in Inland Waterway Transportation

General Ashburn offered what is probably the frankest and most definite statement of the waterway advocates' position with respect to the cost of improving waterways for transport service.

"We can profit," he said, "by an examination of the required investment in floating equipment, the physical conditions of operating the channels, terminals, and overhead, necessary for the successful operation upon these various water highways, regardless of the cost of creating these channels. Since no charges are made for the utilization of any of our waterway avenues, the practical operator is not concerned with their cost of construction,

nor is he inclined to view with alarm any enormous expenditures made, so long as they have been made, and so long as all the avenues are open to him without cost. He accepts the situation as it is, and leaves to economists, statisticians and college professors the academic question of whether the Congress was right or wrong in spending money for such purposes. He says, in effect, 'The government may have been right or wrong in spending money to create these channels, but so long as the money has been spent, it has been spent, and academic discussion does not concern me; what does concern me is whether I can profitably operate upon the channels which have been created by the government by the expenditure of such funds.'

"In discussing the Great Lakes it is necessary to consider the canals and rivers connecting them as an integral part of one system. In discussing canals I shall take the New York Barge canal as typical, because it is the longest and best equipped canal in the United States, and of greatest potential national importance."

General Ashburn then described the character and cost of equipment best suited to lake, river and canal transport, and the operating conditions imposed for the purpose of arriving at the "theoretical" return which the carriers must earn to pay operating expenses, and interest and depreciation on the floating plant. This minimum "theoretical" return is 1 mill per ton mile on the Great Lakes, 3 mills for the New York Barge Canal and 1.7 mills on the Lower Mississippi.

"I have gone to considerable pains and effort," he continued, "to present to you the different theoretical incomes necessary to successfully operate upon the three types of lake, canal, and river channels under ideal conditions, because of the fact that in most public discussions the ardent waterway advocates point to lake costs as the ultimate cost by river, and the opponents of waterways



point to the Erie canal as the great failure whereby river transportation should be judged. As I have shown; neither of these is a correct assumption; it is not correct to group the three together as a whole, and figure add for the sake of argument.

#### Private, Contract and Common Carriers

"Our lakes, canals and navigable rivers can be utilized by private, contract, or common carriers. The cost of operation of these three carriers, and their value to the public increase in the order named. The utilization of our navigable streams by private and contract carriers alone does not justify the expenditure of the money of all the people for their creation, and indeed, if such utilization were the sole purpose of their construction, then a large part of our people would be unjustly taxed for the benefit of a few who would reap the advantages to be derived from such carriage.

"One of the dangers of the utilization of our navigable streams and canals only by private carriers which are big corporations," he contended, "is that the construction of the fleets necessary to carry the tremendous bulk essential to economical operation of such transportation facilities involves such an original investment of capital that very few corporations can stand the expense so that those fortunately enough situated to create and operate their own fleets can transport their products cheaper than their competitors and undersell them, thus destroying healthy competition.

"A contract carrier may be of great advantage, or a positive detriment to a large portion of the country, depending upon whether his operations result in a monopoly that throttles competition. But if there exists in competition with such private and contract carriers, a great common carrier, offering to all the people the same facilities that such private and contract carriers offer to a few, at the same price, there is no chance of such private and contract carriers creating a monopoly that will throttle competition.

"Broadly speaking, the conditions precedent to the success of a great common carrier are not necessarily present for the success of a private or contract carrier. At the same time, to extend the benefits of cheaper water transportation on inland rivers and canals to all, requires the utilization of great common carriers, and to create these conditions, precedent to success, it has been found necessary to have a governmentally-owned corporation, functioning as a private corporation, but backed by the great powers of the government itself. Railroad opposition had been successful in practically annihilating common carriers on our streams and the lakes."

General Ashburn's paper included a classified summary of the operations of the Inland Waterways Corporation which he offered as a basis upon which calculations regarding the economics of water transportation may be based.

#### The Barge Line Dollar—Where it came from and where it went, calculated on the total revenues and total expenses of the operating divisions of the Inland Waterways Corporation

	1927	1928
Where the dollar came from:		
Total revenues .....	\$ .997	\$1.00
Operating deficit covered by Corporation .....	.003	
	1.00	1.00
Where the dollar went:		
Maintenance and operation, line vessels .....	.439	.403
Maintenance and operation, terminals .....	.407	.393
Traffic expenses .....	.045	.041
General expenses .....	.045	.049
Loss and damage .....	.032	.029
Maintenance and operation—Railroad .....	.021	.021
Charter expenses .....	.011	.005
Net income .....		.059
	1.00	1.00

"You will observe," he explained, "that the maintenance and operation of terminals comprises 39.3 per cent of the total costs of operation. This is because the terminal facilities, generally speaking, are owned by the cities in which they are located, and our organizations not only operate and maintain them, but pay 15 cents per ton, in one case 20 cents per ton, for every ton of freight handled over them. This 15 cents per ton is supposed to be sufficient to pay interest on the bonds, pay taxes, and amortize the investment. This is the answer to the public statement so frequently made that the taxpayers are being mulcted by the barge line to pay for terminals.

#### Limitations of Water Transport

"The physical nature of waterways limits the ports at which tows may touch or cargo be received, but rail or motor transportation has not such limitation. There thus results in our operations a costly transfer from car or truck to large, or vice versa, and sometimes a second costly transfer, where the freight originates on a rail line, is transferred to barge, and again to rail.

"When the point of origin is a river port, and the destination is a river port, and the same barge can carry its cargo from point of origin to point of destination, then, and then only, can water transportation offer a comparable service to an all-rail service. If it be necessary, as it now is, to transfer cargo moving between upper river points and lower river points, there is introduced a burdensome cost which good business practice demands should be eliminated, but which could not be eliminated so long as one fleet was designed to operate on a four-foot channel, and the other designed to operate on a nine-foot channel. The costs of these transfers must be absorbed in the joint rail-water-rail rates, lower than all-rail rates, or the public will receive no advantage from such joint rates.

"The Inland Waterways Corporation, a congressional agent," he said in conclusion, "was organized for the purpose of demonstrating that our whole policy of rendering streams navigable upon which so much money has been spent, and will be spent, is not a colossal failure. It may safely be said that the demonstration made has convinced the people of the United States that the policy of Congress, far from being a great mistake, has been the result of far-sighted vision; and the people themselves have demanded further and further expansion of the operations of this corporation. They have seen its practical effects, cheaper transportation for all through co-ordination of rail carriers which, when fairly divided, will afford each participating carrier a reasonable living revenue."

#### Railways Versus Waterways, an Economic Comparison

L. D. Cornish, chief engineer of the division of waterways, State of Illinois, submitted a long paper which represented the result of a statistical analysis to show the relative economic justification of capital expenditures for further railway development and waterway improvement. As presented it constituted an answer to the questions:

(a) What will be the probable transportation demand upon the railroads of the United States in 1950?

(b) What will be the cost of additional railroad trackage and equipment required to supply the probable increase in transportation demand?

(c) How much of the transportation demand can be supplied by inland waterways now authorized but uncompleted?

(d) What will be the probable cost of providing inland waterway transportation facilities, terminals and operating equipment?

(e) What will be the relative benefit to the public for freight shipments by rail or inland waterways?

To answer the first two questions, trend curves were prepared on the basis of Interstate Commerce Commission statistics for the purpose of estimating the probable magnitude, as of 1950, of such items as the following: Net ton-miles, number of locomotives and freight cars, total tractive power of locomotives, total track-mileage, net ton-miles per track-mile, etc. The total freight traffic in 1950 was estimated at 870 billion ton-miles, while the increase in fixed property and rolling stock to meet the growth of freight traffic, together with the probable cost, were summarized in the table reproduced below:

Main tracks .....	50,000 miles at \$60,000	\$3,000,000,000
Yard and siding tracks .....	70,000 miles at 40,000	2,800,000,000
Freight car capacity .....	57,000,000 tons at 40	2,280,000,000
Loco. tractive power .....	862,000 tons at 2,500	2,155,000,000
Buildings, miscellaneous equipment, etc. ....		765,000,000
<b>Total .....</b>		<b>\$11,000,000,000</b>

These costs were then applied to the added capacity which each item of physical improvement would provide for the purpose of ascertaining the cost per ton-mile of increased capacity. This was developed by the author as follows:

The density of traffic in 1950 will be 1,600,000 ton-miles per year per mile of track. Hence, the additional 120,000 miles of freight trackage will take care of 192 billion ton-miles of traffic. At a cost of \$5,800,000,000 this trackage will cost 3.02 cents per ton-mile of freight capacity.

The 57,000,000 tons of additional car capacity, as derived, is 35 per cent of the total for 1950 and its hauling capacity is, therefore, 35 per cent of 870 billion or 305 billion ton-miles. The cost of this additional car capacity was shown to be \$2,280,000,000, which is at the rate of 7.5 mills per ton mile of freight carrying capacity.

The 862,000 tons of additional tractive power is 36 per cent of the total for 1950, and, therefore, its hauling capacity is 313 billion ton-miles, and the additional locomotive cost is 6.9 mills per ton-mile.

The cost of buildings, etc., distributed over 313 billion ton-miles amounts to about 2.5 mills per ton-mile of traffic. The sum of these unit costs amounts to 4.7 cents per ton-mile of freight capacity, and this amount is presented as the probable unit cost of providing additional railroad facilities to handle adequately the increase in freight ton mileage which may be expected in the next 25 years.

### The Capacity of Inland Waterways

The traffic capacity of the Mississippi Valley trunk line waterways, when fully developed, was estimated by Mr. Cornish on the basis of an engineering study, at 60 billion ton-miles per year, while the possibility of developing a traffic of this magnitude in these waterways was investigated by further reference to I. C. C. statistics.

The writer tabulated the ton-miles statistics from the I. C. C. report for 1924 for 30 railroads serving the Mississippi valley and found their total ton-miles to be over 162 billion. Several of the roads served other territories. After making allowances for these conditions, it was found that about 100 billion ton miles might be assumed as within the Mississippi valley, which valley comprises 65 per cent of the total area of the United States.

Based on the prospective increase in traffic, an additional 120 billion ton-miles will materialize by 1950. It does not appear unreasonable to assume that the waterway system could take care of one third of this increase or 40 billion ton-miles, equivalent to a water haul of about 60 billion ton-miles, in view of the fact that the annual traffic of the federal barge line alone on the Mississippi river now exceeds one billion ton miles and the uncompleted Ohio River system now produces in excess of 2 billion ton-miles.

To show that the attainment of the volume of traffic is not unreasonable, an analysis was made of the growth of traffic on various existing waterways, taking the tonnage of 1919 as a basis for comparison with the tonnage in 1925. This showed, for example, that the tonnage on the Erie division of the New York barge canal increased from 673,000 tons to 1,945,466 tons, or 19.4 per cent per year, and that through the Panama canal from 6,981,996 tons to 23,958,826 tons, or 22.8 per cent per year. Taken as a whole the waterways studied showed an average

annual increase of 14.4 per cent per year, from which the conclusion is reached that "such increases are remarkable and if maintained, the capacities of all these waterways would be reached in less than 15 years."

### What the Cost Will Be

The cost of waterway transportation facilities was derived from a study of the operations of the Inland Waterway Corporation, from which the author arrived at the operating facilities given in the table:

Item	Normal Capacity	Unit Cost	Total Cost
	Ton Miles	Mills	
Terminals and harbor equipment	1,000,000,000	3.00	\$3,000,000
Towboats .....	900,000,000	1.9	1,710,000
Barges .....	900,000,000	3.0	2,700,000
Self-propelled barges .....	100,000,000	5.9	590,000
<b>Total .....</b>	<b>1,000,000,000</b>	<b>8.0</b>	<b>\$8,000,000</b>

This table, Mr. Cornish pointed out, shows that the cost of the operating plant for inland waterway transportation represents an investment of eight mills per ton-mile. Following this the author does what is essentially unique for waterway advocates, namely, he recognizes at least a part of the cost of providing the channels, locks, etc., as an element of the actual cost of the transportation by water. By including \$125,000,000 for the cost of completing the project on the Mississippi river, \$20,000,000 for the Illinois waterway and \$5,000,000 for a nine-foot channel in the Upper Mississippi, he arrives at a total of \$150,000,000 as a total charge for the improvement of channels for waterway transportation in the Mississippi valley. This is equivalent to an investment cost of 2½ mills per ton-mile on 60,000,000,000 ton-miles of expected annual traffic. However, the total of \$150,000,000 makes no allowance for expenditures already made in the improvement of inland waterways other than that portion of the \$20,000,000 appropriated by the State of Illinois which has already been spent.

### Economic Advantages

Based upon his study of the costs of providing increased facilities for railway and waterway transportation, Mr. Cornish offers the following conclusions under the heading of Economic Advantages:

The minimum direct benefit of waterway transportation to the shipping public has been fixed by the Interstate Commerce Commission for the Federal Barge line at 20 per cent of the rail rate from port to port of the water haul. It is fair to assume that this will hold for the entire Mississippi Valley system.

The average rail rate of the United States is about 11 mills per ton mile, hence the minimum freight rate saving would be 2.2 mills per ton-mile of rail haul or about 1.5 mills per ton-mile of water haul. On the basis of 60 billion ton-miles of water borne traffic by 1950, the total freight rate saving would amount to about \$90,000,000 per annum.

Another very substantial economic advantage of waterway transportation is the saving in interest on the difference in capital cost of rail or water transportation facilities now under discussion. The additional capital requirements for railroad construction as developed in this paper is premised upon an improvement in the efficiency of our railroads of about 50 per cent between 1925 and 1950. With such an improvement in efficiency there would be no doubt but that the railroads would earn in excess of the stipulated 5¼ per cent fair rate of return, and hence this rate of interest on capital cost may be assumed.

Sixty billion ton-miles of waterway transportation facilities at one cent per ton-mile of capacity as previously developed would cost \$600,000,000, whereas the equivalent railroad capacity of 40 billion ton miles at 4.7 cents per ton mile would cost \$1,880,000,000. The difference in favor of waterways is \$1,280,000,000 and the interest charge saving at 5¼ per cent amounts to \$73,600,000 per annum.

The writer, therefore, presents as his answer to question (e) that the minimum economic advantage of inland waterway transportation on the Mississippi Valley system by 1950 will be



an annual freight charge saving of \$90,000,000 plus an interest charge saving of about \$73,600,000, or a total annual saving of about \$164,000,000 based upon a waterway freight movement of 60 billion ton-miles per annum.

## Rail and Water Transport As a Railway Man Sees It

"It is questionable whether inland water transportation on the rivers can be revived and improved to such an extent as to enable it to compete successfully with the railroads of today," was the opinion expressed by E. A. Hadley, chief engineer of the Missouri Pacific. "The railroads are increasing in efficiency from year to year and rendering it correspondingly more difficult for other methods of transportation to compete with them. The statement is often made that the development of the inland waterways and their operation will decrease freight rates, but this is contrary to the facts, as the river rates are now established at a fixed percentage below the level of railroad rates and, therefore, no incentive exists for the railroads to lower their rates, for if this were done the river rates would be correspondingly lowered and the same percentage of differential would prevail.

"The Transportation Act of 1920 provides that the railroads shall be permitted to earn a reasonable return upon the value of their property devoted to transportation purposes," he continued, "and it is obvious that any other agency which tends to take revenue away from the railroads, whether such agency is operated by private capital or subsidized by the government itself, is not an influence favoring a reduction of rates but will, on the contrary, tend to bring about a need for an increase in the rates to provide gross earnings necessary to furnish the fair return contemplated under the law.

"Our government restricts the profits of the railways as it does those of no other large industry. It subsidizes competition with them as it does with no other industry, being engaged at the present time in spending billions of dollars in improving highways and waterways upon which other carriers operate without paying adequately for their use or submitting to such regulation of their service and rates as do the railroads. It is the privilege of the American people to undertake the development of any transportation agency they desire, but the principles of our government should enable us to keep in mind the fact that we cannot expend the money of all the people for the development of an enterprise which, due to its location, can be helpful to but a small portion of the people and then only by doing great injury to another branch of the same industry upon which all of the people must depend. If river transportation can be produced at a substantially lower cost to the public than the cost of railroad transportation, then the public would be justified in encouraging such development and using such method of transportation in preference to the railroads.

### All Factors Should Be Considered

"In considering the real cost of any form of transportation it is necessary to take into consideration all factors entering into that service," he contended, "not only those which are positive in character but also those which may be negative, as best exemplified by the item of taxation. The railroads of the United States pay yearly taxes totaling almost \$400,000,000. The government operated barge lines pay nothing. The railroads furnish and maintain at their own cost their rights of way, roadway structures and signal systems. All of these items are furnished to the barge lines by other departments of the government without charge against barge-line operations.

"If all the costs incurred by the government through its various departments to maintain navigation on our rivers were assembled and charged against the cost of operation of the barge lines, the cost per ton of freight transported by the barges would be shown to be so enormous that its realization would doubtless discourage further development along these lines. The real question at issue is whether the cost of transportation to the public as a whole will be decreased or if only individual shippers would benefit by this service, the deficits through operation and the cost of the improvement work to be paid from taxes or buried in the records of other departments of the government. If the benefit is to accrue to individual shippers only then it is unfair to the balance of the people.

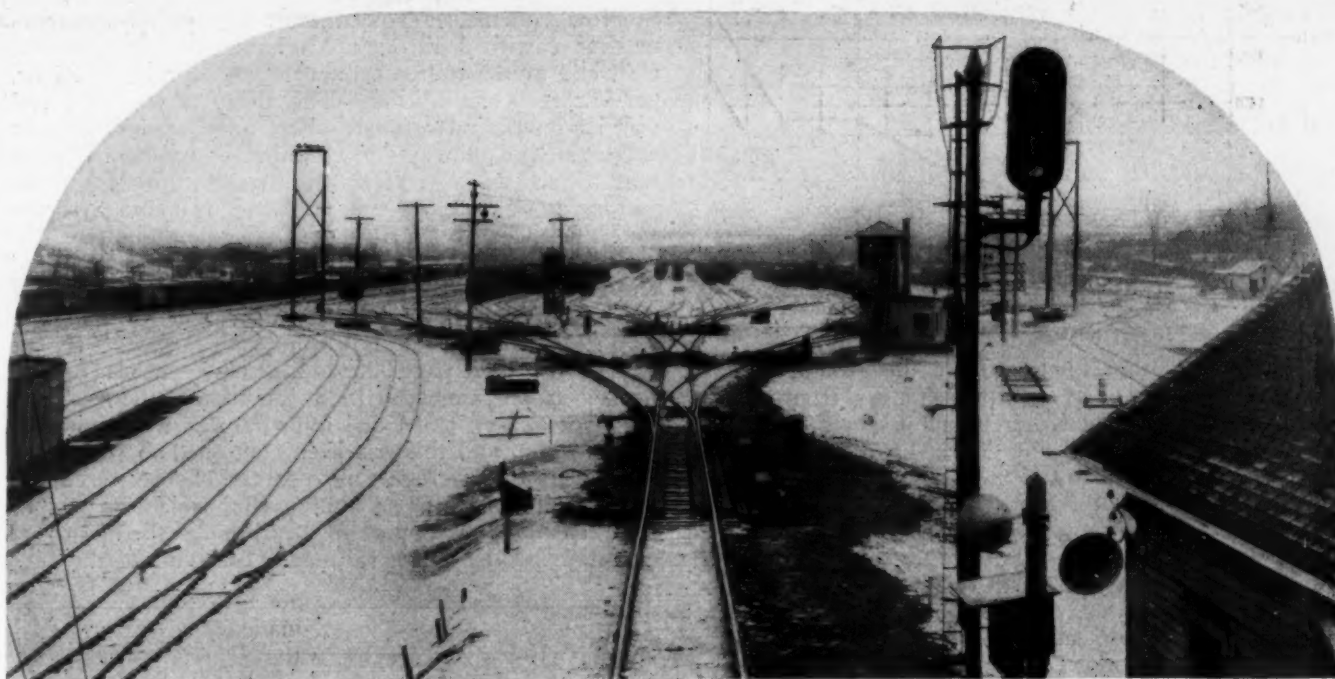
"Another fact to be noted, especially in connection with the present proposals to extend barge service into the Upper Mississippi and its tributaries, is that these waterways are open for navigation only seven or eight months out of the year. Direct expenditures on these natural waterways, including tributaries, have already exceeded \$600,000,000. It cannot be considered sound public policy to reduce railroad earnings, impair railroad credit and render railroad service inadequate in order that a field may be provided for water services, which at best can and should be only supplementary to the railroads.

### A Costly Experiment

"The New York State Barge Canal has cost the taxpayers more than \$270,000,000," he said. "Prior to its construction it was estimated that it would handle twenty million tons of freight per year but in its best year (1928) it handled a little more than three million tons. Any one of the railroads operating between Buffalo and New York could have handled this entire traffic without disturbance of its normal business. The canal costs the taxpayers of New York State nearly \$11,000,000 per year and the people of New York State would have saved approximately \$4,500,000 if all the freight had been handled by the railroads with the state paying the charges, and the shippers would have saved about \$3,000,000.

"Ex-President Coolidge, in an address in the early part of this year, issued a warning to the American people regarding the menace to national prosperity that is presented by the enormous increases in expenditures made by our government and the increases in taxes made necessary thereby. The National Industrial Conference Board in a recent statement has called attention to the fact that the nation's total tax bill in 1923, only five years after the World War, was 7,234 million, while in 1928, 10 years following the close of the war, it was 9,169 million, an increase within the five-year period of 26 per cent.

"Taxes are increasing faster in proportion than either the population or the national income. In 1923 they were less than \$65 per capita; in 1927, \$76.50, and in 1928 still more. In 1913 taxes were only 6.4 per cent of the national income. In 1923 they were 10 per cent and in 1927, 12 per cent, and the percentage for 1928 was 12½. The railroads as a whole are not opposed to river transportation if it can be successfully conducted without being subsidized and they have co-operated in a constructive manner in the provision of port terminal facilities and in the application of joint rates. They should not, however, be compelled to meet a competition that cannot stand alone, and further expenditures by the government to extend river transportation will certainly have to come out of revenues received from taxes, which are already burdensome enough."



Mid-Winter at the Yard at Mechanicville, N. Y.

# Rebuilding a Railroad's Operating Methods

*Boston & Maine revises its operations to suit the peculiar needs of New England traffic*

## Part I

**I**N 1920, the Boston & Maine averaged 10,542 gross ton-miles per train-hour; in 1928, this figure was 18,534 miles, an increase of 7,992 miles or 75.8 per cent. In the same period, gross tons per train increased from 1,040 to 1,570, a rise of 530 tons per train or 51 per cent; car-miles per car-day rose from 16.8 to 26.3 or 56.5 per cent, and train-miles per train-hour from 10.1 to 11.8, an increase of 1.7 miles or 16.8 per cent.

Within the last three years, the B. & M. has been

practically rebuilt as to terminals, roadway, power and bridges, \$43,000,000 having been spent for additions and betterments in 1926, 1927 and 1928. At the same time the operating methods have also been "rebuilt" to obtain the maximum utilization of these facilities. The results of the co-ordinated programs of improved facilities and improved methods are indicated in Figs. 1 and 2, which show graphically the ascending curve of gross ton-miles per train-hour and gross tons per train while the detailed figures may be found in the accompanying table. The present improvement in operation is particularly note-

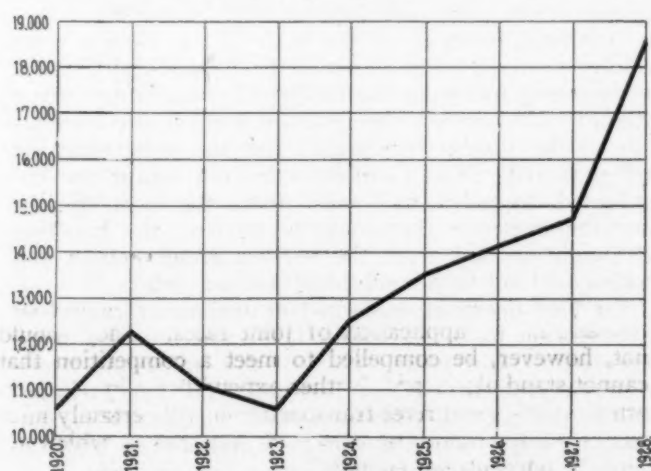


Fig. 1—Gross Ton Miles Per Train Hour

### Operating Improvements—Boston & Maine

Year	Gross Ton Miles per Train Hour	Gross Tons per Train	Train Miles per Train Hour	Car Miles per Car Day
1920	10,542	1,040	10.1	16.8
1921	12,311	1,095	11.2	16.7
1922	11,100	1,085	10.2	16.9
1923	10,581	1,094	9.7	16.7
1924	12,575	1,185	10.6	19.0
1925	13,596	1,247	10.9	21.1
1926	14,159	1,334	10.6	21.4
1927	14,750	1,331	11.1	22.7
1928	18,534	1,570	11.8	26.3

worthy when it is considered that, five years ago, the Storrow committee, in its investigation of New England railways, was highly critical of the B. & M.

When the new management took over the property, and the new general manager reported to the president, he was given instructions to "go out and live on the railroad. For the present, you have no office duties. Your



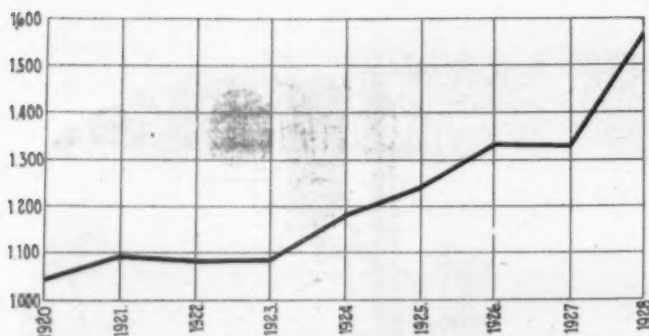


Fig. 2—Gross Tons Per Train

job is to study the situation from the ground up and arrive at the solution of each problem, not from a theoretical standpoint, but from actual experience at the places where things are being done."

Armed with these instructions, the general manager proceeded to carry them out literally. For over six months, he lived on the railway and studied its problems at first hand. His only visits to headquarters at Boston were few and short, merely to report progress.

Since it was manifestly impossible for him to be everywhere at once, he built up, in a surprisingly short time, a competent staff of observers, who studied such angles of the problems as he himself was unable to cover in the time at his disposal. In this manner, the entire railroad was covered, thoroughly and painstakingly. The terminal situation, freight and passenger service, car handling and the other elements that make for successful operation, were studied carefully, each in its turn, and solutions were worked out. Despite the progress shown, the task is not yet regarded as completed by any means. It is the intention to continue the progress and improve upon it.

#### The Terminal Situation

The B. & M., despite the fact that it operates 2,080 miles of lines in five states, serves such a highly industrialized territory that its problems, in general, may be likened to those of a terminal railway. This fact was confirmed by a study made over a period of some months, which showed that over 60 per cent of the freight trains operated consisted of switching locals. The extent to which this situation exists is indicated by another study covering the year 1928, which was made to determine the effect of this large number of switching locals on the gross ton-miles per train-hour. This study shows that, for the year, the average for week-days was about 17,500 gross ton-miles per train-hour, while the average for Sundays, when no switching locals are run, was approximately 30,000 gross ton-miles, or a spread of 12,500 miles. The comparative graphs developed by this study are shown in Fig. 3.

Everything pointed toward the necessity for getting

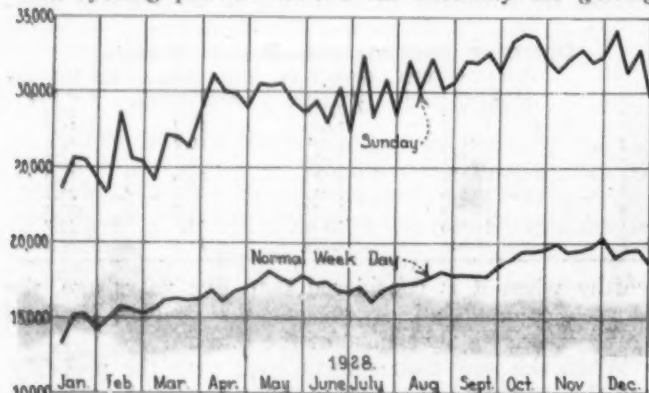


Fig. 3—Comparison of Week-Day and Sunday Gross Ton Miles Per Train Hour

cars through terminals promptly. The report of the Storrow committee showed that, five years ago, cars moving eastward through Mechanicville yard, at the west end of the railroad, required an average of 25 hr. per car for classification. This delay at the west end was having an unfortunate effect on the entire freight service of the railway and resulting in frequent disruption of schedules. After an investigation of all the factors, it was decided that the existing manually-operated hump yard was inadequate to handle the business.

Accordingly, it was determined to rebuild the yard and convert it into a retarder yard, incorporating all of the most recent developments in retarder yard design. This was done, as described in the *Railway Age* of February 4, 1928, page 295, and the new yard was opened for service on January 4, 1928. As soon as the new yard began operation, a decided improvement was shown in classification, and this has been continued to such good effect that the average time per car has been reduced from 25 hr. to 10 hr., a time saving which, as will be seen, has had an important bearing on the improved operation of the entire railroad. In addition, the time

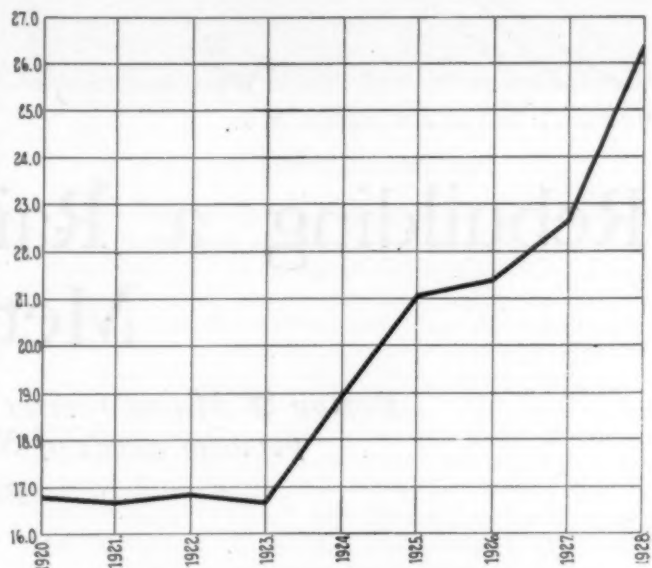


Fig. 4—Car Miles Per Car Day

between Mechanicville and East Cambridge has been reduced as much as 36 hr., in some cases.

Another factor that was interfering seriously with efficient operation was the Boston terminal situation. Each of four principal roads, which were eventually consolidated to make the B. & M., had its own ideas as to the facilities necessary for serving Boston. The result was that, when the consolidation came some years ago, the terminal facilities of the B. & M. at Boston were widely scattered and almost entirely non-coordinated. In the years following the financial consolidation, many attempts were made to bring about a physical consolidation of the Boston terminals. But the basic situation still persisted. The facilities were not meant for co-ordinated operation, and, even under the most efficient operating methods that could be devised, the handling of freight to and from the various freight houses and yards could not be accomplished without delays.

The high operating costs and inconvenience caused an investigation to be started in 1918, and the final plans represent several years' study of the traffic and transportation problems of New England. The new facilities, built in the last two years as a result of this study, comprise a freight house, a storage warehouse, a bulk delivery yard and automobile unloading facilities, with

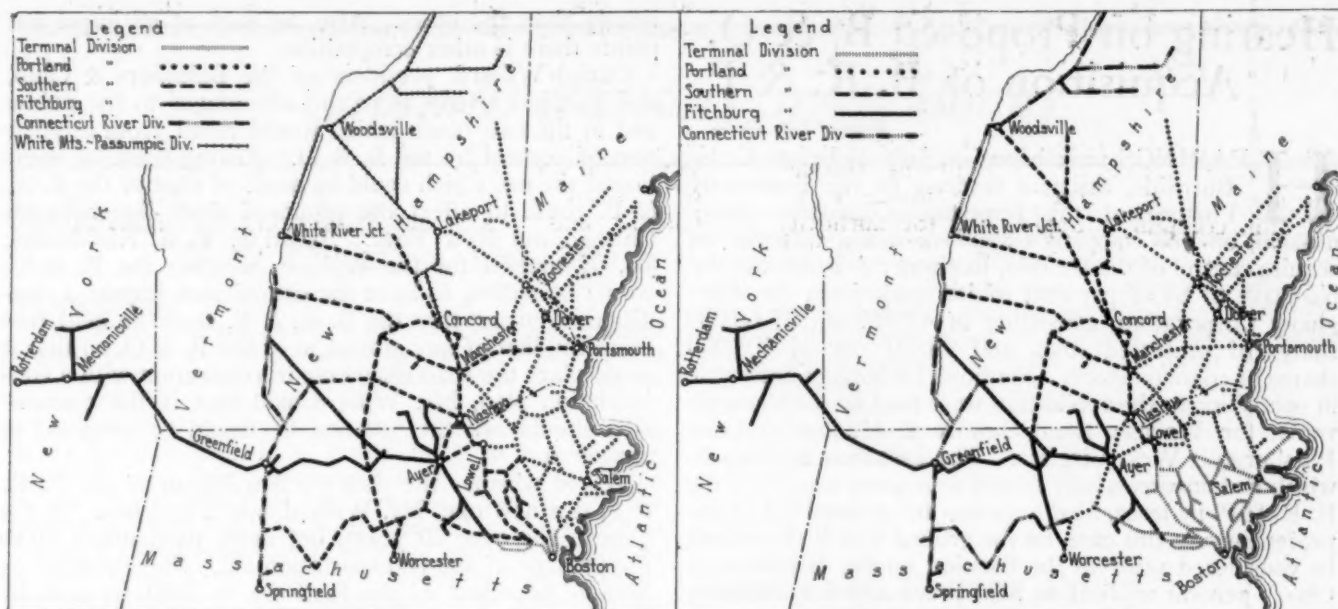


Fig. 5—The Old and New Line-ups of Operating Divisions on the B. & M.

adequate tracks, platforms and driveways. In addition, a large, modern, car retarder yard was built at East Cambridge, to facilitate and centralize the heavy classification work at Boston. This yard was opened on June 5, 1928, and was described in the *Railway Age* of July 7, 1928.

While the Mechanicville and East Cambridge yards are the outstanding improvements, all of the yards were studied and the entire yarding plan was placed on the basis of the greatest good for the system as a whole. Car miles per car day reflect this improved situation and the upward curve is indicated in Fig. 4.

#### Schedules Improved

This complete revision of terminal plans had an excellent effect on the road passenger and freight service. With yards adequate to the traffic needs, it was possible to run fewer and heavier trains, and to operate them on much more reliable schedules. In fact, all freight trains, including the switching locals, are now scheduled on the B. & M. There are so many connections and so many diverging lines to be served, that this presented a difficult problem. However, with the assurance that the trains would not be held out upon arrival at the terminals, a basis was finally arrived at, whereby all trains are not only scheduled, but actually adhere to these schedules closely. In addition, in the past two years, the B. & M. has developed motor truck co-ordination with its freight trains at nine major points of concentration along its lines, using as many as 171 trucks to and from approximately 200 stations, still further improving its service by expediting pick-up and delivery. This, by reducing the station time of locals, has permitted extended runs, or the consolidation of runs, to good effect.

#### Reassignment of Operating Divisions

Some years ago, the B. & M. was divided into eight operating divisions. When the new management took over operations, this number had been reduced to six. A study of the situation revealed that there was still much to be desired from an operating standpoint. Crews were operating over as many as three divisions in the course of one run, thus dividing the responsibility for the performance of the trains among three sets of superintendents, trainmasters and dispatchers. This divided supervision was not conducive of efficient operation. As a

result of a thorough investigation, the divisions were reassigned on April 29, 1928, and the mileage regrouped into five operating divisions. The old and new line-ups of divisions are indicated in Fig. 5.

Under the present arrangement, divided responsibility is avoided as much as possible. The divisions are arranged in accordance with the natural flow of traffic, rather than on a more or less arbitrary basis. The Portland division, for example, which formerly terminated at Nashua, N. H., now extends through to Worcester, Mass., the line between Nashua and Worcester being put under the jurisdiction of the Portland division for the reason that most of the traffic moving over this line originates at or is destined to points on the Portland division, or points beyond. The other divisions have been re-arranged along similar lines.

The Terminal division, which formerly included only Boston and its immediate suburbs, has been extended to cover the entire Boston manufacturing district. This permits unified control of most of the switching locals operating out of Boston on the network of lines converging at that point.

The development of the competitive spirit and the part played by timely and accurate statistics in rebuilding the operating methods, will be described in Part II of this article, to appear in an early issue.

\* \* \*



Grand Trunk Passenger Train in the White Mountains Near Gorham, N. H.



## Hearing on Proposed B. & O. Acquisition of B. R. & P.

WASHINGTON, D. C.

**H**EARINGS were begun on July 24 before C. V. Burnside, assistant director of the Bureau of Finance of the Interstate Commerce Commission, on this company's application for authority to acquire control of the Buffalo, Rochester & Pittsburgh by purchase of 84.82 per cent of its stock from the Alleghany Corporation, consisting of 43,024 out of 60,000 shares of preferred stock and 96,927 out of 105,000 shares of common stock. Petitions for leave to intervene in opposition to the application were filed by the Pennsylvania, the Wabash, the Delaware & Hudson and the Pittsburgh & West Virginia. The Delaware & Hudson, which had unsuccessfully sought to acquire control of the B. R. & P. by lease, filed a motion for a dismissal of the proceedings in this case, on the ground that it should not be considered prior to the decision on the Baltimore & Ohio's general application filed previously for authority to acquire control of a number of eastern roads.

The Wabash, in its petition, also asked the commission to dismiss the proceeding unless the Alleghany Corporation shall agree to become a party and submit to the jurisdiction of the commission and agree to be bound not only by such order as the commission shall make in respect of the stock of the B. R. & P., but also in respect of any carrier stock, control of which by other interests shall be necessary in carrying out such permanent allocation of railway mileage in eastern territory as the commission may determine to be in the public interest. It asserted that the Alleghany Corporation was organized in furtherance of and to aid in the carrying out of the plan for the creation of four railway systems in eastern territory "said plan also providing for dismemberment of the Wabash," and that the corporation "although now indirectly through said Baltimore & Ohio Railroad Company invoking the aid of this commission to enable it and its principals to carry out said plan . . . claims not to be subject to the jurisdiction of this commission and claims the right to hold certain securities, among these shares of stock of the Wheeling & Lake Erie Railway Company which could not lawfully be held by its principals."

George M. Shriver, senior vice-president of the Baltimore & Ohio, testified as to the advantages which he said would result from co-ordination of the two roads. He said the lake cities of Buffalo and Rochester, being important terminals of the B. R. & P., could be more closely linked with the Atlantic seaboard, especially the port of Baltimore, if the B. & O. were permitted to acquire control of the line and he pointed out that the Locust Point terminals are amply able to take care of more traffic, particularly grain. He also asserted that the B. & O. could help considerably in the handling of grain shipments at Buffalo and Rochester, because of the diversity of its traffic and its greater number of box cars which could be made available. He also cited the record of 30 years of close relationship between the two roads and pointed out various economies that could be effected by operation of the two under a single management.

J. J. Ekin, comptroller of the Baltimore & Ohio, testified as to exhibits analyzing the traffic interchanged between the two roads and showing economies that could be effected, amounting to about \$600,000 a year. O. S. Lewis, freight traffic manager, also discussed in detail the traffic relationships, saying that there is little competition between the two roads and that each serves a territory of its own which it can reach more expedi-

tiously than the other. Also, he said, at all important points there is other competition.

Daniel Willard, president of the Baltimore & Ohio, also testified briefly as to the advantages to the public and to the two roads which would result from acquisition of control by the B. & O. Among these he mentioned the use which could be made of part of the B. R. & P. route to effect the proposed short line between Chicago and New York. Asked by F. C. Nicodemus, Jr., of counsel for the Wabash, whether the B. & O. would be willing to have the commission impose a condition requiring that the B. R. & P. stock be held free from the lien of any mortgage of the B. & O. so that it could place the road elsewhere in connection with a consolidation plan, Mr. Willard said that if the commission should ask the question he would be prepared to answer it.

Asked whether the plan for acquisition of the B. R. & P. is a new one, Mr. Willard said it had been "in the picture for over 20 years, but more particularly since the passage of the transportation act. Shortly after he became president of the B. & O., in 1910, he said, he had been shown maps prepared to show how well the two roads would fit together, which he had been informed had been prepared at the request of L. F. Loree, who had preceded him by several years as president of the Baltimore & Ohio.

The Pennsylvania, in its intervening petition, pointed out that when the commission denied the application of the Delaware & Hudson for authority to lease the B. R. & P., it assigned as a reason its belief that the roads involved might advantageously form parts of a larger system connecting the Atlantic seaboard with the Great Lakes or the Mississippi Valley. It also made the point that the commission in its tentative plan included the B. R. & P. in a system other than the Baltimore & Ohio and that the commission still has under consideration the general problem of the proper disposition of the B. R. & P., and other roads. "Your petitioner," the Pennsylvania said, "as one of the large systems that will be affected, is interested in the pending proceeding because it involves an application by its competitor, for advance authority to acquire the control of an important railroad property, the disposition of which should be considered by the commission, as it stated in effect in the Delaware & Hudson case, in connection with the general grouping of railroads into a limited number of systems."

The Delaware & Hudson, taking the position that the application as to the B. R. & P. is supplemental to the general application filed by the B. & O., says that "to take the present application under consideration for ultimate disposition before hearing and disposing of the general application, in which questions of public interest and conformity with the commission's consolidation plan must necessarily be the chief and paramount conditions, would be like putting the cart before the horse, an inverse order of things."

"We question seriously whether the commission is not required by law to await its disposition of the general application under authority of paragraph (2) of section 5, and then, if good cause is shown, make such orders, supplemental to any order made under paragraph (2) as it may deem necessary or appropriate in the premises. For this reason we urge that the application be forthwith dismissed without prejudice to the applicant filing another supplemental application if and when the commission approves its general application in so far as acquisition of the Buffalo, Rochester & Pittsburgh is concerned."

## Communications and Books

### Railroads Need to Utilize Their Engineers' Capabilities

EAST ORANGE, N. J.

TO THE EDITOR:

The whole railroad problem has been so conspicuously brought before the public during the past few months that this seems the logical time to emphasize every phase of the matter which may offer better hopes.

The difficulties which confront the railroads in endeavoring to conduct their business on a profitable basis have been attacked primarily from a managerial angle. Aside from trying to win higher rates from the government and fighting one another for individual advantage, every effort has been concentrated upon managerial efficiency and economy. The limits reachable along these lines are discouragingly plain despite the results achieved. The steady decrease in gross earnings cannot be compensated for by increases in net, and the losses in passenger business are not being met by gains in freight traffic.

The heart of the matter is that the railroads must continue to compete successfully in the transportation business, and to do so must offer much cheaper and faster service than their rivals. There seems a reasonable possibility of doing this.

Despite accomplishments in moving heavier tonnage on slightly swifter schedules, with greater economy for long haul freight and catering to the desire for greater comfort by passenger traffic, the prime problem of cheap fast travel has not received the direct attention which could be bestowed upon it.

This is an engineering problem rather than a managerial one, and American railroad engineers are undoubtedly equal to it. If they are sent to conferences with instructions to learn as much and divulge as little of value as the situation admits, nothing can be expected to result towards the solution of the common railroad difficulties.

Cursory attention to the engineering phases of automotive competition discloses that efficiency has been attained by devising methods permitting easier acceleration and "roadability" at higher speeds.

The application of such principles to railroad transportation is being studied. Roller bearing trucks reducing the energy necessary to start and pull loads are being used and experimented with, largely on the grounds of greater comfort to passenger traffic. Their real value will appear when such trucks are perfected to handle heavy loads at higher speeds with economies justifying their cost. The easier starting of trains so equipped through the elimination of friction is an important saving. The possibility of maintaining speed on curves with reduced wear to wheels and rails is obvious where free wheels are used. The perfection, reasonable manufacture, installation and maintenance of such improvements will be pursued when it is clear that greater speed and cheapness of operation are imperative to the solution of railroad difficulties.

Another question arising as a part of the problem of increased speed with safety will be greater "roadability", which demands lower centers of gravity for car loads. This question seems less easy to meet within moderate expense limits than the economies and comforts possible from the reduced friction obtainable by equipping present coaches and freight cars with modernized trucks. It will have to be met, however, if the railroads are to compete as passenger carriers with automobiles and the air transport, and it will have to be met where the load rests: that is on the floor of the cars.

The capital invested in the railroads is so vast that the financial integrity of the nation is closely bound up with their solvency. To see the country's finances jeopardized by blindness to the engineering character of this problem is unthinkable.

With the growth in the congestion of the vast metropolitan population centres short haul passenger business seems bound

to become an increasingly important factor in the stabilization of railroad earnings. Highway facilities are inadequate for expeditious urban accommodation and the forward looking roads are already completing plans to meet such conditions with profit to themselves and the public, but the forces which make for progress must not be permitted to atrophy because of any present physical structure of the roads which impedes improvement. The railroad problem has grown too swiftly to be met by half measures which do not face the future with sincere and broad vision, with courage and with the decision to act before it is too late.

L. DE LAGERBERG.

### Prewar and Postwar Prices and Cost of Reproduction

CLEVELAND.

TO THE EDITOR:

I have always admired your persistent and forceful advocacy of equitable regulation of transportation agencies, and have read with interest your exposition of the O'Fallon decision on pages 1189-90 of the *Railway Age* of May 25. Your remarks, however, contain what appears to be an admission which I think is unwarranted and which may be grasped by anti-railroad agitators. You say: "There subsequently occurred, owing to the great war, large increases in the cost of reproduction which, of course, were not anticipated by those who had advocated a valuation and who had written the law requiring it."

Without qualification, this statement may be construed to mean that present-day prices result wholly from war conditions and, therefore, that present-day prices are abnormal. Undoubtedly, the war caused a "bulge" in prices, followed by a deflation, but now, more than ten years after the war, this highly abnormal inflation and consequent reaction may be definitely limited to the period 1915-22. In the period from 1923 to date, prices of practically all materials, and labor, have been remarkably free from irregularity.

The point I desire to make is this:

Present-day price "levels", so-called, are the result of economic forces which have exerted themselves over a long period of years and present-day prices of many articles of commerce should be and are as if the war had never happened. I do not intend to say that this is true of all commodities, for it is distinctly untrue of certain commodities.

Generally speaking, there has been a gradual rise in the prices of nearly all commodities, and labor, from 1896 until the present time. The regularity, or uniformity, of this price trend was violently disturbed during the period 1915-22, but since that period prewar price trends, if projected through and beyond the war period, tend to overtake, or intersect, or "catch up" with postwar trends.

While, for example, the price trends of a large number of metal products do not conform to the general law, it is true that at this time, or within a few years, the price trends of nearly all other commodities have, or will have, arrived at those locations which they would have reached if they had merely followed well established prewar (1896-14) tendencies.

That prewar and postwar price trends, for the most part, conform to the general law, which I have expressed in general terms in the foregoing, can be demonstrated from any one of the many comprehensive tabulations of material and labor prices well known to statisticians. In this connection I have particularly in mind, for example, the U. S. Bureau of Labor Statistics Bulletins 440 and 473.

The Interstate Commerce Commission may welcome the suggestion that present-day prices result from an abnormal occurrence and, therefore, that they may be disregarded because they are accidental or abnormal. Fortunately, however, I do not



believe the courts will regard with favor a valuation which does not have in it the evidence of due consideration of a property inventory based on prices as of the period 1923-9.

W. M. HOOVER,

Law Department, Nickel Plate Road.

[Careful study of prewar and postwar trends of prices leads to conclusions strongly supporting the views expressed by Mr. Hoover.—EDITOR.]

## Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian,  
Bureau of Railway Economics, Washington, D. C.)

### Books and Pamphlets

*Industrial Traffic Management*, by L. A. Bryan. Traffic geography, organization and possible accomplishments of an industrial traffic department, 392 p. Pub. by McGraw-Hill Book Co., New York City, \$4.

*The New Exploration—a Philosophy of Regional Planning*, by Benton MacKaye. Railroads and their relation to the "wilderness of civilization," Chapter 2. 235 p. Pub. by Harcourt, Brace, New York City, \$3.00.

*Port and Terminal Charges at United States Ports*, prepared by Board of Engineers for Rivers and Harbors, War Dept. and Bureau of Operation, U. S. Shipping Board as their Miscellaneous Series bulletin no. 1. Rail connections at individual terminals mentioned. 557 p. Pub. by U. S. Govt. Print. Off. Washington, D. C., \$1.

*Proceedings of the Special Committee [of the Senate of Canada] Appointed to Inquire into the Development and Improvement of the St. Lawrence River*. "A quarter century of international negotiation" p. vii-xv. Testimony, p. 1-338. 338 p. map. Pub. by F. A. Acland, Ottawa, Canada.

*Rights and Responsibilities at Railway Grade Crossings*, by John L. Cable. "This book is prepared primarily for the use of lawyers in Ohio grade crossing accidents and claims." Decision on such points as crossing signs, whistle and bell, head lights, speed of train, watchmen, gates and automatic signs are grouped under the proper headings. 132 p. Pub. by Author, Lima, Ohio and Washington, D. C.

*Universal Directory of Railway Officials, 1927*, 35th Edition of this very helpful aid to spelling, geography, study of various types of railway organization, railway mileage, gauges, etc., etc., this time equipped with a bookmark. 400 p. Pub. by Directory Pub. Co. Ltd., London, England. 20 shillings.

### Periodical Articles

*Historical Notes on Locomotive Design. IV—Modern Improvements in Construction*, by E. G. Young. 10 diagrams. Bulletin no. 18, Railway and Locomotive Historical Society, June 1929, p. 21-27.

*Progress in Train Speeds. National Schedules Compared*. "Mile-a-minute runs" in England, France, and U. S. A., and long distance fast time featured. Modern Transport, July 13, 1929, p. 9.

*Russian Armored Railway Cars*, by Maj.-Gen. David P. Barrows. Introducing "broneviki" which range from gondolas armored with concrete to various kinds of box cars fortified for use in offensive and defensive warfare principally in Siberia and Manchuria. Illustrated. Make-up of an "ideal train" from one military point of view, p. 167. Cavalry Journal, April 1929, p. 161-169.

*Some Characteristics of Pearlite in Eutectoid Rail Steels*, by O. V. Greene. Illustrated with diagrams and photomicrographs. Transaction of the American Society for Steel Treating, July 1929, p. 57-76.

*Unparalleled Speed*. Schedule of Engine 870 and special train on New York Central on Sept. 14, 1891, out for a speed record. Bulletin No. 18, Railway and Locomotive Historical Society, June 1929, p. 62-67.

## Looking Backward

### Fifty Years Ago

The St. Louis & Southeastern, Kentucky division, was sold under foreclosure at Louisville, Ky., on July 19 and bought for the account of the Louisville & Nashville for \$101,630. This division extends from Henderson, Ky., to Guthrie, 98 miles.—*Railway Age*, July 24, 1879.

The practice of overloading freight cars has become so common that the roads generally are adopting the plan of weighing them. The Illinois Central has installed 20 track scales and the general freight agent states that they have proved to be a profitable investment.—*Railway Age*, July 24, 1879.

The several properties of the Oregon Steamship Company, the Oregon Steam Navigation Company and the companies owning the railroads built to provide a portage around the rapids of the Columbia river have been consolidated into the Oregon Railway & Navigation Company (now the Oregon-Washington Railroad & Navigation Company) which was incorporated on June 13. It is proposed to construct about 200 miles of railroad, including an extension from Umatilla, southeasterly toward Boise City, Idaho. Here a connection will be made with the Utah & Northern (now part of the Oregon Short Line) to provide a Pacific Ocean outlet for the Union Pacific other than over the Central Pacific (now part of the Southern Pacific).—*Railroad Gazette*, July 25, 1879.

### Twenty-Five Years Ago

The Erie has announced improved service on its line from Chicago to New York in the form of a reduction of the time on its fastest passenger train to 28 hrs.—*Railway Age*, July 29, 1904.

The Florida East Coast plans the construction of an extension from a point 28 miles south of Miami, Fla., to Key West, 136 miles, via the reefs and keys along the eastern and southern shores of the state. This project is without precedent in railroad construction.—*Railway Age*, July 29, 1904.

A recent ruling in which the St. Louis, Brownsville & Mexico (now part of the Missouri Pacific) and the San Antonio & Arkansas Pass (now part of the Southern Pacific) were authorized to make an increase in freight rates represents the first time in its history that the Texas Railroad Commission has ever given such permission.—*Railway Age*, July 29, 1904.

### Ten Years Ago

Before an unsympathetic audience the National Transportation Conference of the Chamber of Commerce presented its plan for the disposal of the railroads on July 25 at the House interstate commerce committee hearing on the Esch bill. The Conference favors corporate ownership, consolidation, Interstate Commerce Commission jurisdiction of rates and creation of a federal board to approve capital expenditures and security issues. A statement was brought out that the Esch-Pomerene plan, if it became a law, would so add to the duties of the Interstate Commerce Commission that five additional members would be needed.—*Railway Review*, July 26, 1919.

The need that something be done to remove the menace of the closed angle cock requires no more striking evidence than that afforded by the circumstances of the rear collision at Dunkirk, N. Y., on July 1. The evidence indicates that the engineer of the following train first attempted to control the speed of his train on approaching the distant signal, only to discover that he had no control of the train brakes. He lost control due to the closing of the angle cock at the rear of the tender by a trespasser riding the "blind baggage," who wished to leave the train at Dunkirk.—*Railway Age*, July 25, 1919.

---

## Odds and Ends of Railroading

---

At the top of the list of policemen who took the New York state police examination recently, was Sergeant Lincoln G. Ross, of the police department of the Long Island. Ross scored 98 per cent.

### The Hole-in-One Club

Earl Munson of the Pullman Company is the latest member to join our hole-in-one club, and also the first employee of the Pullman Company to achieve that distinction. He did it on the 186-yard sixth hole at French Lick Springs, Ind., and in the presence of numerous reliable witnesses.

### The Last Forty-Niner

The passing of Oliver M. Peasley, at the age of 96, probably removes the last participant in the California gold rush of 1849, who was also a railway man. Peasley was one of the original pensioners on the Chicago, Rock Island & Pacific, having been retired in 1909, after more than 47 years' service as an engineman.

### Mules

An excited lady recently telephoned to a Southern Pacific passenger agent.

"I lost a pair of mules on the Overland Limited," she said.

"There must be some mistake," said the agent, "that's a passenger train and doesn't carry mules."

"But I lost them in the drawing-room, they were blue ones with feathers on them and they're the only bedroom slippers I had with me."

### Covered Bridges

RUTLAND, MASS.

Referring to your item on covered wooden bridges. One might add to the list three such bridges on the Boston & Maine, one at Franklin Junction, N. H., and two on the Pemigawasset branch, one at Plymouth, N. H., and one at Thornton, N. H. I think the Boston & Maine has unchallenged supremacy in the matter of covered wooden bridges.

HAROLD I. JUDKINS, JR.

### Family Service

The Cleveland, Cincinnati, Chicago & St. Louis points with pride to the Goodwins of Mattoon, Ill., four of whom work for the Big Four. Horace is trainmaster on the Springfield division, with 45 years service to his credit. His twin brother, Harry, is a train baggageman, with 47 years service. Another brother, William, is also a train baggageman, with 39 years service, while Harry's son, Fred, is a train dispatcher, with 25 years service. The combined total for the Goodwins is 156 years service.

### Believe It or Not

When the Bellefonte Central was being built from Bellefonte, Pa., to State College, Pa., rattlesnakes were plentiful in the mountains and a great many were killed by the surveyors. Chief Engineer Boal was asked how he managed to escape being bitten, to which he replied: "We all wear heavy lumbermen's stockings and tie them around our legs above the knee. When a rattler hits them, he can't get through, nor can he get away. We carry big knives, and when we feel a rattler hit us, we cut his head off. I came in one night with 26 heads hanging to my stockings."

### Who Said 13 Was Unlucky?

If numbers have anything to do with luck, then W. R. Knox, better known as "Captain Bob", retired pumper on the Norfolk & Western, has been flirting with bad luck for 87 years without injury. He was born on the 13th day of

the month, as one of 13 sons, and left his boyhood home on the 13th day of the month. Also he married on the 13th. There are 13 children in his own family. He underwent an operation for appendicitis on Friday, the 13th, and was involved in a powder explosion on the 13th day of the month. He was retired on July 1, 1917.

### Unusual Freight

The railways are called upon to handle a bit of everything, it seems. The most recent shipment of peculiar freight is a carload of potted lilies, which moved from Richmond, Cal., to Long Beach over the Southern Pacific. It might also be mentioned that not a single pot or plant was damaged.

### Touring the World on the S. P.

If station names are to be believed, it is possible to tour the world on the Southern Pacific. The Orient is represented by Aden and Delhi, not in Arabia and India respectively, but in New Mexico and California. Italy is represented by Florence, Palermo and Venice, the first in Arizona and the last two in California. Greece is represented by Athens, Spain by Alhambra, Scotland by Ben Lomond and Switzerland by Zurich, all in California. South America is represented by Cape Horn and Patagonia, the first in California, the second in Texas, while Alaska is represented by Nome, Texas.

### All-Day Service

There is a Canadian Pacific manager on duty every hour of the twenty-four, according to a recent survey. The Montreal office is open from 8:30 a. m. to 5 p. m. By this time, the manager of the office at Hong Kong, China, is on duty, it being morning there, and when he quits for the day, the manager of the London, England, office, where the time is several hours different than at either Montreal or Hong Kong, is on duty, so that the entire 24 hours is covered.

### An Unique Wedding

Two young railroad daughters participated in an unique double wedding ceremony recently. The brides were Misses Dorothy Cox and Thirley Brown, daughters of enginemen on the Norfolk division of the Pennsylvania. Both presented themselves with the prospective grooms to a minister at Seaford, Del., for a double ceremony, but he discovered that the licenses had been issued in different states. Accordingly, he drove the two couples to the Maryland-Delaware state line, where he parked his car with the front seat in Maryland and the back seat in Delaware and performed the double ceremony legally.

### Mifflin's Departed Glories

The buildings that once housed the shops, supplies and clerical forces of the Pennsylvania at Mifflin, Pa., (49 miles west of Harrisburg) are now mostly razed, and the completion of the change, says the Altoona Mirror, marks the final passing of Mifflin as a center of railroad activities, a distinction it had enjoyed for almost 80 years. With the completion of the wrecking of these buildings, the last material evidence of the prominent place the town once occupied in railroad circles will have been obliterated. About three years ago, the railroad company removed the shops and storehouses from Mifflin to Lewistown. Mifflin became the western terminal of the Middle division of the Pennsylvania railroad with the completion of the laying of steel rails to that point in 1848. The place was named in honor of Governor Thomas Mifflin, who served as governor of Pennsylvania from 1790 to 1799. In 1848 the railroad was single track, with two passenger trains each way daily. The freight trains ran three times a week each way. Mixed trains, freight and passenger, were run over the main line as late as 1877.



# NEWS of the WEEK



Wabash No. 82, Solid Train of Perishables, Leaving Kansas City for Eastern Destinations

AN ABANDONED BRICK VENEER ROUNDHOUSE of the Minneapolis & St. Louis at St. Paul, Minn., which was constructed in 1880 and had been used for 15 years as a storehouse for records and correspondence of the railroad, was destroyed by fire on July 14.

SIX PERSONS, including two Erie train service employees, two railway mail clerks, a passenger and another believed to have been a trespasser riding on the freight train, were killed in a collision between a Cleveland-New York passenger train and a derailed tank car of a west-bound freight train which fouled the east-bound train of the Erie near Corning, N. Y., on July 11.

ACTUAL CONSTRUCTION work on the Reading Company's \$20,000,000 electrification project was begun on July 23 when the pouring of concrete foundations for the catenary supports was commenced at Wayne Junction on the Bethlehem branch. The work will proceed in both directions from this point and it is expected that this branch will be electrified as far as Lansdale by early fall of next year.

THE CANADIAN MINISTER OF LABOR, Peter Heenan, has appointed a board of conciliation and investigation to deal with the wage dispute between the Canadian National and the Canadian Pacific and conductors, trainmen and yardmen on the western lines of the two roads who are members of the Order of Railway Conductors and the Brotherhood of Railroad Trainmen. The number of employees directly affected by the dispute is about 6,000.

THE THIRD DISTRICT COURT OF APPEALS at Sacramento, Cal., has awarded damages of \$16,175 to the plaintiff in a suit against the Southern Pacific on the grounds that when a railroad train, running behind schedule, wrecks an automobile at a crossing, killing or injuring the passengers, the company is guilty of contributory negligence. The suit was based on the charge that the train which demolished the plaintiff's automobile near Stockton was 25 min. late and that the plaintiff was familiar with the train schedules and would not have been injured except for the railroad's negligence.

## K. C. M. & O. Operated as Part of Santa Fe

The Atchison, Topeka & Santa Fe and the Panhandle & Santa Fe, following their leasing of the Kansas City, Mexico & Orient and the Kansas City, Mexico & Orient of Texas, comprising 735 miles of line, will on August 1 take over and operate the line between Wichita, Kan., and Altus, Okla., as a part of the Panhandle division of the Santa Fe. The section of line between Altus and Alpine, Tex., will be operated as a part of the Slaton division of the Pandhandle & Santa Fe.

## N. Y. Grade Crossing Program

More than \$30,000,000 worth of work incidental to the elimination of dangerous grade crossings in New York state is now under way, according to a statement of the New York Public Service Commission. As of July 5, the Commission had issued 345 orders for the elimination of 530 crossings. The cost of this work is estimated at \$48,538,010.

Thus far 53 projects have been completed which involve 92 grade crossings, while 64 other projects which involve 100 grade crossings are now under construction. The cost of the work now under construction is estimated at \$5,704,295.

The Commission now has fourteen projects ready for the awarding of contracts and eight others are ready to be let with the exception of acquiring the necessary land.

## Propaganda on Western Extension to Cease

Replying to the letter from Commissioner B. H. Meyer of the Interstate Commerce Commission in which he suggested that the large amount of propaganda relating to the proposal of the Great Northern and Western Pacific to build connecting lines from Klamath Falls, Ore., to Paxton, Calif., was not helpful, Paul Shoup, president of the Southern Pacific, Ralph Budd, president of the Great Northern, and H. M. Adams, president of the Western Pacific, have notified the commission of an agreement to desist from all forms of propaganda in connection with the project and to dis-

courage the sending of resolutions to the commission. They have agreed to refrain from having addresses made on the subject of the extension and to discourage taking part in the case by organizations unless the latter have moved on their own responsibility to intervene and offer witnesses.

## Increase in Trains Struck by Motorists

Two significant facts are shown by reports filed with the Interstate Commerce Commission by the railroads as to the number of highway grade crossing accidents in 1928, an analysis of which has been made public by the Safety Section of the American Railway Association.

More than 25 per cent of the highway grade crossing accidents in which motor vehicles were involved in 1928 resulted from motorists running into the sides of trains and there was a greater increase in the number of accidents caused by motorists striking the sides of trains in 1928, compared with 1927, than in the number of highway grade crossing accidents resulting from motor vehicles being struck by trains.

Of 5,036 highway grade crossing accidents in which motor vehicles were involved during the past year, 1,275 resulted from motorists crashing into the sides of trains, either standing still or in motion. This was an increase of 113 or 9.7 per cent compared with the number of such accidents in 1927. Highway grade crossing accidents resulting from motor vehicles being struck by trains totaled 3,761 in 1928, an increase of 74 compared with the preceding year, or an increase of two per cent.

Highway grade crossing accidents involving motor vehicles resulted in 2,175 fatalities in 1928, an increase of 183 over the number of fatalities resulting from such accidents in 1927. Fatalities resulting from motor vehicles being struck by trains in 1928 accounted for 1,898 fatalities, while 277 persons lost their lives as a result of motor vehicles running into the sides of trains. There was an increase of 159 in the number of persons injured in motor vehicle highway grade crossing accidents during the past year compared with the preceding year.

### Signal Section Meets at Atlanta in September

The Signal Section, American Railway Association, will hold its eighty-fourth stated meeting at the Atlanta-Biltmore Hotel, Atlanta, Ga., on September 10-12. Arrangements have been made for the operation of a special train from New York to Atlanta for the use of members from eastern points. This special train

will operate on the schedule of the Crescent Limited over the Pennsylvania and the Southern, leaving New York at 8:40 p. m., Eastern standard time, on September 8, arriving at West Philadelphia at 10:49 p. m.; Baltimore 12:57 a. m.; Washington, 2:10 a. m., and arriving at Atlanta at 5:40 p. m., Central standard time the following day.

Those taking the train at New York, Philadelphia and Baltimore should make

reservations through M. N. Luthi, division passenger agent of the Pennsylvania, Pennsylvania terminal, New York. Those wishing accommodations in sleeping cars to be picked up at Washington should address S. E. Burgess, division passenger agent of the Southern, McPherson Square, Washington, D. C.

The passenger department representa-

(Continued on page 270)

### Operating Revenues and Operating Expenses of Class I Steam Railways in the United States

Compiled from the Monthly Reports of Revenues and Expenses for 182 Steam Railways, Including 16 Switching and Terminal Companies.

FOR THE MONTH OF MAY, 1929 AND 1928

Item	United States		Eastern District		Southern District		Western District	
	1929	1928	1929	1928	1929	1928	1929	1928
Average number of miles operated .....	241,369.93	240,890.49	59,912.98	59,950.93	45,748.11	45,758.63	135,708.84	135,180.93
Revenues:								
Freight .....	\$412,017,760	\$391,733,308	\$186,242,868	\$175,623,881	\$72,916,560	\$70,896,841	\$152,858,332	\$145,212,586
Passenger .....	668,895,595	670,420,388	37,106,839	37,252,647	8,844,450	10,016,097	22,944,306	23,151,644
Mail .....	11,655,563	8,026,606	5,041,990	3,074,835	1,686,262	1,402,309	4,927,311	3,549,462
Express .....	14,459,342	12,691,181	6,201,938	5,636,463	2,567,808	1,959,302	5,689,596	5,095,416
All other transportat'n .....	18,339,430	17,728,234	10,976,862	10,346,878	1,190,687	1,172,868	6,171,881	6,208,488
Incidental .....	11,676,967	10,166,745	6,055,161	5,093,706	1,275,512	1,368,211	4,346,294	3,704,828
Joint facility—Cr. ....	1,031,143	1,103,882	352,114	413,711	167,981	169,659	511,048	520,512
Joint facility—Dr. ....	328,266	358,376	88,515	126,466	36,267	43,368	203,484	188,542
Railway operating revenues .....	537,747,534	511,511,968	251,889,257	237,315,655	88,612,993	86,941,919	197,245,284	187,254,394
Expenses:								
Maintenance of way and structures .....	80,102,698	79,538,134	32,807,518	31,952,887	12,890,821	12,510,162	34,404,359	35,075,085
Maintenance of equipment .....	103,949,761	99,647,307	49,729,499	46,243,118	17,800,854	17,893,344	36,419,408	35,510,845
Traffic .....	11,360,797	10,642,772	4,259,640	3,890,011	2,074,755	1,974,006	5,026,402	4,778,755
Transportation .....	175,492,239	173,058,438	84,132,795	81,460,934	27,803,682	28,132,326	63,555,762	63,465,179
Miscellaneous operat'ns .....	4,752,001	4,602,553	2,179,390	2,164,279	488,330	563,975	2,084,281	1,874,298
General .....	16,473,312	16,375,321	7,189,862	7,331,797	2,756,162	2,714,184	6,527,288	6,329,340
Transportation for investment—Cr. ....	1,153,758	1,494,816	259,016	303,759	97,233	91,400	797,509	1,099,657
Railway operating expenses .....	390,977,050	382,369,709	180,039,688	172,739,267	63,717,371	63,696,597	147,219,991	145,933,845
Net revenue from railway operations .....	146,770,484	129,142,259	71,849,569	64,576,388	24,895,622	23,245,322	50,025,293	41,320,549
Railway tax accruals .....	33,661,522	30,904,356	14,901,888	13,524,307	6,068,796	5,744,239	12,690,838	11,635,810
Uncollectible ry. revs. ....	94,103	117,102	26,105	51,914	21,111	28,139	46,887	37,049
Railway operating income .....	113,014,859	98,120,801	56,921,576	51,000,167	18,805,715	17,472,944	37,287,568	29,647,690
Equipment rents—Dr. balance .....	7,486,730	7,751,181	4,238,342	4,204,890	180,456	168,281	3,067,932	3,378,010
Joint facility rent—Dr. balance .....	1,912,088	2,147,953	914,794	1,182,524	177,444	165,013	819,850	800,416
Net railway operating income .....	103,616,041	88,221,667	51,768,440	45,612,753	18,447,815	17,139,650	33,399,786	25,469,264
Ratio of expenses to revenues (per cent) ..	72.71	74.75	71.48	72.79	71.91	73.27	74.64	77.93

FOR FIVE MONTHS ENDED WITH MAY, 1929 AND 1928

Average number of miles operated .....	241,297.77	240,582.44	59,915.66	59,908.90	45,775.18	45,668.27	135,606.93	135,005.27
Revenues:								
Freight .....	\$1,928,637,814	\$1,821,310,172	\$854,793,656	\$795,315,021	\$356,224,578	\$342,367,321	\$717,619,580	\$683,627,830
Passenger .....	635,165,438	636,452,139	183,311,774	186,264,525	54,299,588	57,996,123	114,142,676	116,191,491
Mail .....	750,624,200	39,526,053	19,687,344	14,938,719	8,029,116	6,993,173	22,907,740	17,594,161
Express .....	60,309,982	54,569,936	27,853,864	24,749,499	10,300,672	9,273,355	22,155,446	20,547,082
All other transportat'n .....	85,525,791	82,455,616	48,716,264	46,198,229	6,290,684	6,104,274	30,518,843	30,153,113
Incidental .....	51,062,563	46,269,227	26,528,518	23,592,026	7,288,683	7,417,030	17,245,362	15,260,171
Joint facility—Cr. ....	5,167,618	5,529,023	1,738,898	2,166,111	783,231	761,254	2,645,489	2,601,658
Joint facility—Dr. ....	1,610,253	1,838,846	411,274	654,277	172,706	176,801	1,026,273	1,007,768
Railway operating revenues .....	2,531,371,753	2,408,273,320	1,162,219,044	1,092,569,853	442,943,846	430,735,729	926,208,863	884,967,738
Expenses:								
Maintenance of way and structures .....	333,896,779	329,727,649	136,932,446	134,767,267	62,763,645	60,472,229	134,200,688	134,488,153
Maintenance of equipment .....	502,229,933	489,368,522	239,949,870	228,172,268	86,767,008	88,125,154	175,513,055	173,071,100
Traffic .....	53,038,571	51,655,438	19,849,498	19,184,540	10,037,021	10,176,324	23,152,052	22,294,574
Transportation .....	875,615,491	864,811,375	414,026,154	407,330,704	141,289,286	143,373,975	320,300,051	314,106,696
Miscellaneous operat'ns .....	23,467,810	22,497,292	10,919,309	10,670,153	3,099,387	3,282,113	9,449,114	8,545,026
General .....	80,508,663	81,058,732	34,877,785	36,184,225	13,615,034	13,536,118	32,015,844	31,338,389
Transportation for investment—Cr. ....	4,524,240	5,853,774	940,921	882,526	407,964	595,902	3,175,355	4,375,346
Railway operating expenses .....	1,864,233,007	1,833,265,234	855,614,141	835,426,631	317,163,417	318,370,011	691,455,449	679,468,592
Net revenue from railway operations .....	667,138,746	575,008,086	306,604,903	257,143,222	125,780,429	112,365,718	234,753,414	205,499,146
Railway tax accruals .....	161,763,463	151,027,884	67,054,762	62,018,490	30,660,429	29,385,651	64,048,272	59,623,743
Uncollectible ry. revs. ....	493,923	551,727	200,247	266,503	102,640	97,756	191,036	187,468
Railway operating income .....	504,881,360	423,428,475	239,349,894	194,858,229	95,017,360	82,882,311	170,514,106	145,687,935
Equipment rents—Dr. balance .....	37,478,021	37,188,554	20,414,381	20,276,568	1,286,276	1,185,499	15,777,364	15,726,487
Joint facility rent—Dr. balance .....	10,041,301	10,029,941	4,950,064	5,216,935	910,006	783,823	4,181,231	4,029,183
Net railway operating income .....	457,362,037	376,209,980	213,985,449	169,364,726	92,821,078	80,912,989	150,555,511	125,932,265
Ratio of expenses to revenues (per cent) ..	73.65	76.12	73.62	76.46	71.60	73.91	74.65	76.78

\* Includes \$3,235,900 sleeping and parlor car surcharge. b Includes \$3,192,239 sleeping and parlor car surcharge. c Includes approximately \$1,981,410 back railway mail pay. d Includes \$16,326,130 sleeping and parlor car surcharge. e Includes \$15,914,071 sleeping and parlor car surcharge. f Includes approximately \$4,126,396 back railway mail pay.

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.



## Operating Statistics of Large Steam Railways — Selected Items for May, 1929, Comp

Region, road and year	Average miles of road operated	Train-miles	Locomotive-miles		Car-miles		Ton-miles (thousands)		Average number of locomotives on line				
			Principal and helper	Light	Loaded (thousands)	Per cent loaded	Gross. Excluding locomotives and tenders	Net. Revenue and non-revenue	Servicable	Un-servicable	Per cent unservicable	Stored	
New England Region:													
Boston & Albany.....	1929	407	206,995	218,129	19,501	5,320	67.5	270,584	98,905	104	17	14.3	39
	1928	407	193,947	206,626	21,655	5,353	67.6	274,920	103,121	98	21	17.6	30
Boston & Maine.....	1929	2,059	404,878	474,726	54,956	13,985	71.5	689,926	267,969	258	40	13.4	48
	1928	2,074	424,186	542,758	52,226	13,476	69.9	681,758	268,021	269	53	16.4	37
N. Y., New H. & Hart....	1929	2,104	521,561	596,137	39,589	17,079	67.7	889,034	347,126	277	74	21.0	16
	1928	2,122	552,712	619,414	40,579	17,206	66.2	925,651	371,639	319	55	14.7	47
Great Lakes Region:													
Delaware & Hudson.....	1929	875	345,010	458,956	48,995	11,311	66.4	679,281	317,537	241	28	10.5	81
	1928	875	350,723	473,911	52,788	11,039	63.4	678,235	319,243	245	37	13.2	78
Del., Lack. & Western....	1929	998	547,753	610,275	68,560	19,442	66.8	1,104,623	462,471	240	59	19.6	6
	1928	998	566,124	642,791	73,409	18,224	65.0	1,056,646	442,531	248	58	18.8	5
Erie (inc. Chi. & Erie)...	1929	2,317	925,027	995,223	75,248	41,323	63.7	2,457,571	1,009,739	391	102	20.7	27
	1928	2,317	896,739	977,140	85,689	39,032	63.7	2,322,647	974,580	412	116	22.0	35
Lehigh Valley .....	1929	1,343	562,711	616,776	68,685	18,704	64.2	1,122,645	486,844	289	87	23.1	52
	1928	1,346	588,956	651,234	77,391	18,676	63.3	1,134,424	497,354	361	79	17.9	76
Michigan Central .....	1929	1,822	606,026	609,658	17,356	22,080	61.7	1,204,089	408,077	192	39	16.9	17
	1928	1,822	580,252	583,957	16,716	20,377	60.2	1,142,718	390,619	200	72	26.5	28
New York Central.....	1929	6,467	2,111,061	2,348,975	163,115	85,126	60.6	5,121,025	2,122,803	973	354	26.7	153
	1928	6,459	2,039,501	2,285,052	159,358	79,478	61.5	4,782,519	1,972,233	1,034	359	25.8	279
New York, Chi. & St. L....	1929	1,665	672,274	679,192	7,102	22,230	63.9	1,235,619	462,149	206	66	24.3	32
	1928	1,665	611,590	618,684	7,307	20,530	62.5	1,146,162	422,380	223	59	20.8	64
Pere Marquette .....	1929	2,178	466,942	471,200	5,428	12,034	62.6	714,697	303,257	177	35	16.3	7
	1928	2,181	438,354	443,229	6,613	11,446	62.4	661,616	269,795	179	38	17.5	15
Pitts. & Lake Erie.....	1929	231	138,480	140,931	1,566	5,057	62.6	384,880	218,530	52	12	18.2	12
	1928	231	116,843	118,783	1,909	4,313	60.1	351,963	195,363	54	19	26.1	11
Wabash .....	1929	2,497	875,119	908,449	13,772	26,249	63.4	1,507,576	552,408	290	71	19.7	17
	1928	2,497	780,954	814,246	12,452	23,745	63.4	1,356,511	481,609	304	61	16.8	60
Central Eastern Region:													
Baltimore & Ohio.....	1929	5,536	2,099,378	2,476,323	172,263	62,964	61.3	4,194,169	1,946,947	995	208	17.3	95
	1928	5,534	1,917,051	2,266,262	176,157	57,572	60.8	3,819,803	1,771,104	998	253	20.2	176
Central of New Jersey.....	1929	691	277,232	299,245	51,160	8,172	57.9	546,595	248,780	178	30	14.4	25
	1928	691	281,537	305,946	50,403	8,672	58.1	579,530	275,329	178	36	16.9	28
Chicago & Eastern Ill....	1929	946	237,445	238,334	2,531	6,826	66.0	395,069	168,991	88	77	46.6	22
	1928	945	229,818	230,486	2,939	5,993	64.2	355,507	154,371	117	53	31.2	49
Clev., Cin., Chi. & St. L....	1929	2,371	761,236	790,298	19,814	25,447	61.3	1,605,898	712,186	322	129	28.6	39
	1928	2,370	734,218	758,937	17,459	23,800	60.9	1,525,158	685,673	335	107	24.1	53
Elgin, Joliet & Eastern ..	1929	453	146,289	155,332	6,367	4,326	63.9	324,399	168,988	76	12	13.2	3
	1928	461	141,139	149,040	5,905	4,080	63.1	305,217	154,304	77	13	14.0	1
Long Island .....	1929	400	51,483	57,403	16,561	640	53.3	43,318	16,893	56	8	11.9	...
	1928	396	53,560	54,494	17,727	672	53.8	46,591	18,889	57	10	14.5	...
Pennsylvania System.....	1929	10,738	4,244,401	4,858,907	459,281	152,140	62.7	10,227,413	4,746,003	2,667	249	8.5	596
	1928	10,758	4,037,788	4,579,132	384,343	140,421	63.5	9,109,211	4,136,508	2,805	349	11.1	804
Reading .....	1929	1,452	618,077	682,557	52,152	18,032	60.9	1,217,150	587,832	342	59	14.8	56
	1928	1,417	649,517	713,879	59,326	17,989	59.6	1,260,208	624,083	329	75	18.5	38
Pocahontas Region:													
Chesapeake & Ohio.....	1929	2,730	1,091,596	1,168,892	46,398	39,185	56.6	3,145,023	1,684,944	534	95	15.1	81
	1928	2,723	1,098,890	1,181,777	42,605	36,973	55.7	3,014,451	1,613,582	553	89	13.8	96
Norfolk & Western.....	1929	2,230	868,580	981,564	36,786	33,790	59.0	3,147,344	1,692,908	467	59	11.2	104
	1928	2,231	829,983	987,376	34,672	30,879	58.0	2,558,795	1,356,711	527	49	8.5	157
Southern Region:													
Atlantic Coast Line.....	1929	5,153	781,242	788,711	9,880	21,834	60.8	1,189,017	423,541	426	57	11.9	75
	1928	5,105	755,092	760,041	11,114	19,719	58.5	1,104,685	386,520	432	54	11.1	93
Central of Georgia.....	1929	1,900	288,476	290,875	4,120	7,047	70.1	376,380	154,013	136	17	11.0	14
	1928	1,898	281,191	282,851	4,697	6,790	68.2	372,958	154,305	136	23	14.4	13
Ill. Cent. (inc. Y. & M. V.)	1929	6,710	2,027,850	2,041,042	31,928	54,894	61.4	3,517,903	1,396,053	744	108	12.7	22
	1928	6,710	1,955,303	1,971,507	30,613	52,449	62.3	3,289,820	1,302,518	756	101	11.8	41
Louisville & Nashville....	1929	5,066	1,680,153	1,757,722	56,483	36,408	57.8	2,504,972	1,148,932	565	95	14.4	37
	1928	5,061	1,736,522	1,801,300	59,431	36,681	57.9	2,534,591	1,183,840	604	101	14.3	39
Seaboard Air Line.....	1929	4,475	628,120	659,011	8,554	16,616	60.1	965,594	330,536	265	43	14.0	...
	1928	4,484	568,370	585,590	7,085	14,660	63.0	821,820	303,447	272	68	20.0	11
Southern .....	1929	6,679	1,541,008	1,571,278	34,010	38,205	62.4	2,156,124	837,755	830	122	12.8	108
	1928	6,718	1,503,623	1,529,903	34,390	37,839	61.7	2,157,495	834,618	837	106	11.2	78
Northwestern Region:													
Chi. & North Western....	1929	8,467	1,424,927	1,486,834	24,449	37,947	62.4	2,263,418	873,610	735	100	11.9	90
	1928	8,463	1,446,938	1,509,409	25,331	37,788	63.1	2,227,140	850,224	773	136	15.0	101
Chi., Milw., St. P. & Pac.	1929	11,244	1,681,359	1,805,908	109,450	52,069	62.8	3,096,443	1,280,404	780	150	16.2	175
	1928	11,247	1,591,222	1,695,139	103,125	48,813	63.7	2,837,382	1,178,522	804	141	14.9	195
Chi., St. P., Minn. & Om.	1929	1,724	302,373	324,676	14,850	6,602	65.9	362,874	146,704	149	23	13.4	26
	1928	1,724	300,810	319,682	14,008	6,512	65.8	357,560	145,601	153	24	13.4	25
Great Northern.....	1929	8,374	855,024	879,037	57,533	33,984	65.9	2,100,833	1,032,749	471	144	23.5	54
	1928	8,305	794,683	824,129	49,676	30,508	66.9	1,834,506	893,604	513	140	21.5	94
Minn., St. P. & S. St. M....	1929	4,357	477,154	493,157	7,628	14,070	68.2	767,753	344,838	199	43	17.8	16
	1928	4,358	494,659	512,433	4,806	14,002	67.5	743,871	322,028	216	32	12.7	26
Northern Pacific .....	1929	6,476	812,045	862,141	50,486	28,142	68.2	1,590,221	705,104	423	118	21.9	46
	1928	6,414	805,614	867,393	50,842	27,788	66.7	1,585,675	683,798	428	127	22.9	48
Oreg.-Wash. R. R. & Nav.	1929	2,246	199,925	208,178	12,868	5,883	69.5	329,745	141,805	120	10	7.3	30
	1928	2,246	196,570	207,247	14,997	5,732	69.2	331,747	147,496	126	16	11.5	16
Central Western Region:													
Atch., Top. & S. Fe (incl. P. & S. F.).....	1929</												

ared with May, 1928, for Roads with Annual Operating Revenues Above \$25,000,000

Region, road and year	Average number of freight cars on line			Per cent un-serv-ice-able	Gross ton-miles per train-hour, ex-cluding loco-motives and tenders	Gross tons per train, ex-cluding locomotives and tenders	Net tons per train	Net tons per loaded car	Net ton-miles per car-day	Car miles per car-day	Net ton-miles per mile of road per day	Pounds of coal per 1,000 gross ton-miles, including locomotives and tenders	Locomotive miles per live-day
	Home	Foreign	Total										
New England Region:													
Boston & Albany.....1929	3,221	5,385	8,606	9.1	18,631	1,307	478	18.6	371	29.6	7,837	160	63.1
1928	2,776	5,122	7,898	5.7	19,913	1,418	532	19.3	421	32.4	8,173	159	61.9
Boston & Maine.....1929	9,266	13,010	22,276	4.2	20,763	1,704	662	19.2	388	28.3	4,198	110	57.5
1928	12,326	11,423	23,749	4.9	18,842	1,607	632	19.9	366	26.3	4,169	115	59.6
N. Y., New H. & Hart.....1929	15,293	16,742	32,035	8.5	22,202	1,705	666	20.3	350	25.4	5,323	108	58.5
1928	17,761	17,244	35,005	8.0	21,862	1,675	672	21.6	342	24.0	5,650	107	56.9
Great Lakes Region:													
Delaware & Hudson.....1929	9,468	6,331	15,799	4.1	25,046	1,969	920	28.1	648	34.8	11,707	134	60.8
1928	8,693	5,826	14,519	3.6	23,520	1,934	910	28.9	709	38.7	11,769	130	60.3
Del., Lack. & Western.....1929	16,974	8,876	25,850	4.5	25,582	2,017	844	23.8	577	36.3	14,946	130	73.4
1928	17,364	7,555	24,919	4.9	23,236	1,866	782	24.3	573	36.3	14,304	130	75.5
Erie (inc. Chi. & Erie).....1929	29,290	19,487	48,777	4.4	34,496	2,657	1,092	24.4	668	42.9	14,059	108	70.0
1928	30,581	18,011	48,592	5.2	31,963	2,590	1,087	25.0	647	40.7	13,570	116	64.9
Lehigh Valley .....1929	20,589	9,689	30,278	10.5	27,920	1,995	865	26.0	519	31.0	11,690	143	58.9
1928	23,263	9,820	33,083	10.2	26,653	1,926	844	26.6	485	28.8	11,920	145	53.4
Michigan Central.....1929	16,926	17,691	34,617	5.4	32,954	1,987	673	18.5	380	33.3	7,225	108	87.5
1928	19,391	15,116	34,507	4.9	31,251	1,969	673	19.2	365	31.6	6,916	102	71.2
New York Central.....1929	67,659	78,069	145,728	5.1	33,273	2,426	1,006	24.9	470	31.1	10,589	101	61.1
1928	71,892	70,768	142,660	5.6	31,964	2,345	967	24.8	446	29.2	9,850	103	56.6
New York, Chi. & St. L.....1929	13,174	10,048	23,222	6.0	27,028	1,838	687	20.8	642	48.3	8,955	103	81.4
1928	14,681	9,620	24,301	8.0	26,537	1,874	691	20.6	561	43.6	8,185	105	71.6
Pere Marquette .....1929	10,196	9,158	19,354	3.4	20,344	1,531	649	25.2	505	32.1	4,492	100	72.7
1928	10,771	7,904	18,675	4.7	19,565	1,509	615	23.6	466	31.7	3,991	102	67.0
Pitts. & Lake Erie.....1929	12,059	9,947	22,006	7.3	32,958	2,779	1,578	43.2	320	11.8	30,481	96	72.0
1928	15,665	6,859	22,524	5.9	34,128	3,012	1,672	45.3	280	10.3	27,250	94	53.7
Wabash .....1929	14,949	13,184	28,133	2.3	27,987	1,723	631	21.0	633	47.4	7,138	119	82.5
1928	16,007	10,832	26,839	3.1	29,039	1,711	617	20.3	579	45.0	6,222	110	73.0
Central Eastern Region:													
Baltimore & Ohio.....1929	71,175	32,724	103,899	7.0	23,364	1,998	927	30.9	604	31.9	11,344	140	71.0
1928	74,926	29,554	104,480	5.9	23,170	1,993	924	30.8	547	29.2	10,323	143	63.0
Central of New Jersey.....1929	16,642	11,130	27,772	6.0	23,585	1,972	897	30.4	289	16.4	11,622	148	54.3
1928	17,580	10,447	28,027	4.2	22,787	2,058	978	31.7	317	17.2	12,853	135	53.6
Chicago & Eastern Ill.....1929	13,069	3,960	17,029	39.5	24,897	1,664	712	24.8	320	19.6	5,761	122	47.2
1928	13,529	3,597	17,126	30.5	23,128	1,547	672	25.8	291	17.6	5,269	133	44.3
Clev., Cin., Chi. & St. L.....1929	22,355	20,073	42,428	5.1	30,192	2,110	936	28.0	541	31.6	9,689	110	57.9
1928	23,948	20,758	44,706	3.8	27,828	2,077	934	28.8	495	28.2	9,331	114	56.7
Elgin, Joliet & Eastern.....1929	8,924	8,472	17,396	5.7	16,112	2,218	1,155	39.1	313	12.6	12,028	124	60.0
1928	9,573	6,747	16,320	4.8	16,477	2,163	1,093	37.8	305	12.8	10,807	121	56.2
Long Island .....1929	1,026	4,937	5,963	2.0	6,038	841	328	26.4	91	6.5	1,361	330	37.3
1928	1,626	5,600	7,226	1.3	5,303	870	353	28.1	84	5.6	1,540	241	34.7
Pennsylvania System.....1929	215,525	88,766	304,291	5.1	28,958	2,410	1,118	31.2	503	25.7	14,257	119	58.8
1928	222,967	80,500	303,467	6.5	26,569	2,256	1,024	29.5	440	23.5	12,404	120	50.8
Reading .....1929	28,060	13,938	41,998	4.2	21,729	1,969	951	32.6	452	22.8	13,058	139	59.1
1928	29,741	12,652	42,393	5.5	21,335	1,940	961	34.7	475	23.0	14,207	145	61.8
Pocahontas Region:													
Chesapeake & Ohio.....1929	31,005	9,919	40,924	3.0	36,322	2,881	1,544	43.0	1,328	54.5	19,909	83	62.4
1928	31,300	9,196	40,496	2.5	34,531	2,743	1,468	43.6	1,285	52.8	19,112	86	61.5
Norfolk & Western.....1929	30,328	8,413	38,741	1.1	44,691	3,624	1,949	50.1	1,410	47.7	24,488	105	62.5
1928	30,353	7,711	38,064	1.1	42,164	3,083	1,635	43.9	1,150	45.1	19,613	123	57.2
Southern Region:													
Atlantic Coast Line.....1929	21,546	9,761	31,307	5.6	22,435	1,522	542	19.4	436	37.0	2,651	101	53.3
1928	23,672	9,047	32,719	5.7	21,118	1,463	512	19.6	381	33.2	2,442	104	51.1
Central of Georgia.....1929	3,675	5,103	8,778	7.0	18,924	1,305	534	21.9	566	37.0	2,615	133	62.2
1928	5,041	3,899	8,940	4.8	19,006	1,326	549	22.7	557	35.9	2,623	131	58.3
Ill. Cent. (inc. Y. & M.V.).....1929	40,671	20,512	61,183	5.7	25,146	1,735	688	25.4	736	47.2	6,711	124	78.5
1928	44,772	20,092	64,864	7.7	24,064	1,683	666	24.8	648	41.9	6,261	125	75.4
Louisville & Nashville.....1929	45,265	15,833	61,098	8.8	19,924	1,491	684	31.6	607	33.3	7,316	135	88.6
1928	44,626	16,109	60,735	9.0	18,965	1,460	682	32.3	629	33.6	7,545	141	85.1
Seaboard Air Line.....1929	14,857	8,979	23,836	5.6	19,981	1,537	526	19.9	447	37.4	2,383	125	69.9
1928	16,086	8,356	24,442	7.5	18,792	1,446	534	20.7	400	30.7	2,183	132	56.2
Southern .....1929	48,497	17,632	66,129	10.0	20,442	1,399	544	21.9	409	29.9	4,046	150	54.4
1928	47,831	18,447	66,278	7.4	19,632	1,435	555	22.1	406	29.8	4,007	151	53.5
Northwestern Region:													
Chi. & North Western.....1929	46,874	26,656	73,530	7.1	20,667	1,588	613	23.0	383	26.7	3,328	124	58.4
1928	47,437	26,810	74,247	7.2	19,796	1,539	588	22.5	369	26.0	3,241	118	54.5
Chi., Mil., St. P. & Pac.....1929	49,530	23,060	72,590	3.0	24,018	1,842	762	24.6	569	36.9	3,673	121	66.4
1928	49,928	19,607	69,535	3.4	23,025	1,783	741	24.1	547	35.6	3,380	122	61.4
Chi., St. P., Minn. & Om.....1929	2,498	8,752	11,250	6.7	15,660	1,200	485	22.2	421	28.7	2,746	115	63.8
1928	2,361	8,312	10,673	7.1	15,350	1,189	484	22.4	440	29.9	2,725	113	60.8
Great Northern.....1929	39,682	9,897	49,579	6.0	30,216	2,457	1,208	30.4	672	33.5	3,978	113	49.1
1928	40,808	8,750	49,558	7.2	27,515	2,308	1,124	29.3	582	29.7	3,471	115	43.2
Minn., St. P. & St. St. M.....1929	19,381	5,519	24,900	4.6	19,516	1,609	723	24.5	455	27.2	2,553	96	66.8
1928	19,513	5,064	24,577	5.8	17,812	1,504	651	23.0	428	27.6	2,384	95	67.3
Northern Pacific.....1929	36,885	6,532	43,417	9.5	25,302	1,958	868	25.1	524	30.6	3,512	138	54.4
1928	37,421	6,771	44,192	9.2	25,649	1,968	849	24.6	499	30.4	3,439	136	53.4
Ore.-Wash. R.R. & Nav.....1929	7,964	3,668	11,632	6.1	22,635	1,649	709	24.1	393	23.5	2,037	157	55.0
1928	8,090	3,052	11,142	6.9	20,924	1,688	750	25.7	427	24.0	2,119	170	50.4
Central Western Region:													
Atch., Top. & S. Fe. (incl. P. & S. F.).....1929	57,006	18,006	75,012	6.2	30,430	1,942	707	21.3	506	36.4	3,614	108	66.4
1928	62,545	16,024	78,569	5.8	28,103	1,885	707	21.8	441	30.8	3,333	108	61.3
Chicago & Alton.....1929	10,306	4,2											



## News of The Week

(Continued from page 267)

tives of the Big Four and the Southern have made arrangements to operate a special convention train between Chicago and Atlanta. This train will be operated between Chicago and Cincinnati over the Big Four, leaving Chicago at 10 p. m. September 7, and leaving Cincinnati over the Southern at 8:30 a. m., Eastern Standard time, September 8, and arriving the same day in Atlanta at 8:20 p. m. This train will be operated as a second section of the Royal Palm. Reservations may be made through the passenger traffic department of the Big Four, 1038 Utilities building, Chicago.

### Fall Meeting of American Welding Society

The papers to be presented by the American Welding Society as its part of the National Metal Congress to be held in Cleveland, Ohio, during the week of September 9 are as follows:

Non-destructive Tests of Welds, by Elmer A. Sperry, Sperry Development Company.  
X-Ray Investigation on Welds, by Dr. H. H. Lester, Watertown Arsenal.  
Oxyacetylene Welding of Pipe Lines in the Field, by W. R. Ost, Air Reduction Sales Company.  
Welding of Pipe Lines, by H. C. Price, manager, Welding Engineering Company, Bartlesville, Okla.  
A Metallurgical Study of Some Metallic Arc Welds, by Prof. H. M. Boylston, Case School of Applied Science, Cleveland.  
Welding of Copper and Copper Alloys, by Mr. Hook, Research Laboratory, American Brass Company.  
Welded High Strength Aluminum Alloys for the Aircraft Industry, by Mr. Dawson, Research Laboratory, Linde Air Products Company.  
Foreign Practice in Welding of Boilers, Tubes and Drums, by G. A. Orrik, consulting engineer, New York.  
Stress-Strain Characteristics of Welded Joints, by Prof. J. H. Smith, University of Pittsburgh.  
Study of Nitroid Needles, by P. Alexander, General Electric Company.  
Cutting and Welding Steel Parts To Replace Castings, by W. J. Buchanan, The Bessemer Gas Engine Company, Grove City, Pa.  
Testing Equipment Used in Welding Industry, by V. G. Tatnall, Southwark Foundry & Machine Company.  
Machinery Design as Influenced by Electric Welding, by H. G. Boist, General Electric Company.

The Iron and Steel Division of the Mining and Metallurgical Engineers, the Iron and Steel Division of the American Society of Mechanical Engineers, the Institute of Metals and the American Society for Steel Treating will have conventions in Cleveland during the same week.

During the National Metal Congress the National Metal Exposition will be held, over 10,000 sq. ft. being devoted to exhibits of welding and cutting equipment and supplies.

### Equipment on Order

The railroads on July 1 had 39,638 freight cars on order, the largest number on any similar date in the past five years, the Car Service Division of the American Railway Association has announced. This was an increase of 24,979 cars above the number on order on July 1 last year and an increase of 16,359 cars above the same day two years ago.

Of the total 19,727 were box cars, an increase of 12,533 compared with the same date last year. Coal cars for which orders have been placed number 16,641,

an increase of 14,441 compared with the number of such cars on order on July 1 last year. Refrigerator cars on order totaled 567, stock cars 959, flat cars, 1,694 and other miscellaneous freight cars, 50, all being reductions under one-year ago except flat cars, which showed a slight increase.

Locomotives on order on July 1 this year numbered 386 compared with 106 on the same day in 1928, and 237 on July 1, 1927. On July 1, 1926, the railroads had 646 on order.

New freight cars placed in service in the first six months of 1929, totaled 32,794, of which box cars totaled 15,196; coal cars 11,482; flat cars 2,017; refrigerator cars 3,007, and stock cars 975. Other classes installed in service during that period totaled 117. New locomotives placed in service in the first six months of 1929 totaled 319.

Freight cars or locomotives leased or otherwise acquired are not included in the above figures.

### Special Train Not Swank; Necessity, Says Coolidge

Calvin Coolidge, who went into the office of President of the United States with the idea that traveling on special trains was official pomp and swank, is now convinced that it is a necessity. Even if a President chooses to ride on a regular train with other people, railroads cannot afford to permit it, Coolidge declares in his latest article in The American Magazine.

"However much he may deplore it," says the Former Chief Executive, "the President ceases to be an ordinary citizen. In order to function at all, he has to be surrounded with many safeguards. If these were removed for only a short time, he would be overwhelmed by the people who would surge in upon him. In traveling it would have been agreeable to me to use the regular trains which are open to the public. I did so once or twice. But I found it made great difficulty for the railroads. They reported that it was unsafe because they could not take the necessary precautions."

The problem was solved, says the Ex-President, by running an extra section of a regular train for the exclusive use of the President and his party. On any presidential trip much detail is involved, Coolidge continues. One or two secret service men must go to the end of the journey several days ahead. His route of travel and every street and building he is to visit must be inspected. The secret service men also approve the order of ceremonies and often, if the police force is inadequate, they arrange for additional military or naval forces to aid local authorities. The President's aides, other secret service men, some of the President's office force and house servants have to be taken along. Facilities must also be provided for a large retinue of newspaper correspondents and cameramen.

Every switch that a presidential train goes over must be spiked down. Every freight train that he passes is stopped and every passenger train slowed down to ten miles an hour.

### B. & M. Statement on Destruction of "Old Peppersass"

The Boston & Maine has issued an official statement in connection with the accident resulting in one fatality and the destruction of "Old Peppersass," first mountain climbing locomotive, during ceremonies on July 20 at Mount Washington, N. H. The occasion was the rededication of the old locomotive which had been in the Baltimore & Ohio collection of railway relics and which was being presented to the B. & M. and the state of New Hampshire for preservation in a museum near the scene of its mountain climbing service on the Mt. Washington cog railroad.

The official statement follows:

"The accident that followed rededication of the locomotive 'Peppersass,' is deeply deplored. The locomotive had been re-conditioned and thoroughly tested, on the mountain and in the shops.

"The locomotive had climbed the steepest part of the mountain, had started to return as planned, and had descended more than a quarter of a mile when something connected with a forward wheel apparently gave way. On the engine at the time were five persons, only two of whom (E. C. Frost of Concord, engineer, and W. I. Newsham of Concord, fireman) were there with any authority. The others, Daniel P. Rossiter of Arlington, Mass., writer-photographer, W. H. Pote of Swampscott, a commercial photographer, and Caleb Frost, 16 year old son of the engineer, had climbed aboard a short time before. Frost shouted a warning. Pote, Newsham and the boy jumped at once, Frost soon after. Rossiter lingered, apparently trying to save his camera, fell while the locomotive was still upright, and was instantly killed. Pote sustained a fractured jaw. He is at the Berlin Hospital. Frost suffered a fractured shoulder bone, with cuts and bruises, and a sprained ankle. Newsham sustained a fracture of the right wrist and a sprained ankle. The two latter are at the Littleton hospital. Young Frost escaped without hurt.

"The cause of the accident cannot be determined further until investigation is completed.

"It is a matter of gratification that no passenger on the cog railroad yesterday was injured in any way. Every passenger was enroute to his home or was staying elsewhere by choice early this (Sunday) morning. The cooperation of every one concerned under the trying conditions made this result possible; and the railroad management wishes to express with its regret sincere appreciation for the fine spirit shown on every side. It could not have been better under any circumstances."

Resolutions adopted by the governors of five states who were among the principal guests at the exercises on Mt. Washington said in part:

"... We would commend the kindly and solicitous care given by Governor Tobey (of New Hampshire) and other officials and citizens, including officials of the Boston & Maine Railroad Company to insure the comfort and safety of those who participated in the celebration at Mt.

Washington. Their conduct during what proved to be a most trying and tragic situation was highly commendable. . . "

This resolution was signed by Governors Theodore Christianson of Minnesota, Henry S. Caulfield of Missouri, George H. Dern of Utah, William G. Conley of West Virginia and John Hammill of Iowa.

A large group of New Hampshire residents, who were guests at the celebration, had previously adopted resolutions, addressed to President George Hannauer of the Boston & Maine, which were transmitted by Edgar C. Hirst (State Tax Commissioner) "upon unanimous vote" as follows:

"Your New Hampshire guests wish to express their appreciation not only of the courtesy extended them today, but also of the events arranged to advertise the scenic beauties of our state. We regret the unavoidable accident and assure you of our confidence and good wishes."

### Flooded Arroyo Wrecks Rock Island Passenger Train

Eight passengers and two Pullman porters were drowned and 39 passengers were injured when the westbound Colorado Express of the Chicago, Rock Island & Pacific was derailed on July 18 while crossing a bridge over a flooded arroyo two miles west of Stratton, Colo. The wrecked train was made up of a combination baggage-mail car, a baggage car, a combination baggage-smoking car, a chair car, seven Pullman sleeping cars and a Pullman observation-sleeping car, pulled by two locomotives. It had passed Stratton, 148 miles east of Denver, 1 hr. and 39 min. late and approached the bridge over Spring creek, an 85-ft. deck plate girder span on concrete abutments, at a speed of about 50 m. p. h.

A truck on the tender of the second

locomotive was derailed at the east abutment where the flood water had weakened the embankment and had undermined the track. This truck spread the rails causing the derailment of the following cars as they reached that point. The first five cars crossed the bridge on the ties, while the sixth car, a Pullman, the Cape Porpoise, was precipitated into the flooded creek and completely submerged. The impact of the derailed cars upon the bridge dislodged the span from the abutments, causing it to fall into the stream with the sixth car. All of the fatalities among the passengers were in the submerged sleeping car. The three Pullmans at the rear of the train remained upright upon the rails, as did the first locomotive.

The eastbound Colorado Express crossed the bridge at 3:07 o'clock in the morning, prior to the accident, which occurred at 3:55 o'clock, and trainmen reported seeing only a small amount of water in the creek. It was also found that there was no evidence of any rain in the immediate vicinity of the bridge prior to the accident.

Some time before the accident a cloud-burst occurred 12 miles southwest of the point where the railway crosses Spring creek and the resulting run-off flowed toward the railway from a drainage area of about 134 sq. mi. This water backed up against a highway bridge 160 ft. south of the railway bridge, prior to the passage of the westbound train, washing out the highway structure and a considerable portion of the highway and throwing practically the entire force of the flood against the east abutment of the railway bridge. Normally the highway bridge would have served to direct the flow of water through the railway bridge opening, but in this case the uncontrolled flow undermined the track immediately back of the embankment.

## Traffic

The Associated Traffic Clubs of America will meet at St. Louis, Mo. on October 15 and 16.

The Chicago, Milwaukee, St. Paul & Pacific has re-equipped its passenger train, the Arrow which operates between Chicago and Omaha and Sioux City, Ia. All cars, including a 14-section, five 12-section, and an 8-section, 1-drawing room 2-compartment sleeping car, a dining car, and a limousine observation car, are equipped with roller bearings. The limousine observation car contains a sun parlor with windows that operate similar to those of an automobile and is provided with a radio and a phonograph. The dining car has electrical refrigeration.

### Secretary Hyde Suggests Florida Citrus May Be Made Safe for Shipment

The Secretary of Agriculture stated July 18 that the research work which has been intensively prosecuted in Florida on methods of destruction of the Mediterranean fruit fly in fruit indicates the possibility that, by modification of existing practices in precooling and coloring, fruit may be made safe for shipment. The Secretary also announced that there is reason to believe that the development of these methods as a supplement to the other suppressive measures now in force will make possible the movement of the citrus crop of this year without exposing additional areas to risk of infestation.

### Embargo Against Grain at Galveston

Effective on July 18, on account of the large accumulation of export grain in cars and elevators at Galveston, amounting to about 4,000 cars, and the uncertainty of the movement of such traffic from the port by steamer, the railways serving that port issued an embargo against all carload shipments of grain destined to, reconsigned or diverted, or intended to be reconsigned or diverted, to or via Galveston. The embargo notices stated that permits would be issued releasing for movement to Galveston shipments of grain upon proper assurance that such grain was to be used for milling or manufacturing purposes by Galveston industries and would be immediately accepted and unloaded.

### New York-Boston Sea Plane Service Inaugurated

The Airvia Transportation Company, on July 22, inaugurated an over-the-water airplane passenger service between New York and Boston with sea planes scheduled to make the trip in two hours. The route follows the water over its entire length, proceeding from New York harbor over Long Island Sound and thence



Wide World

Electric Locomotive Used in Berlin, Germany, for Hauling Main Line Trains Through the City



across over the Cape Cod canal to Cape Cod bay and Boston harbor.

One daily round trip is scheduled. A plane leaves New York harbor at 11:00 a. m. (Daylight Saving time) and is scheduled to arrive in Boston harbor at 1:00 p. m. (Daylight Saving time). On the return trip the plane leaves Boston at 3:00 p. m. and is scheduled to arrive in New York at 5:00 p. m. The one-way fare, including luncheon, is \$30 and 25 lb. of baggage are carried free.

### Freight Traffic in May

The volume of freight traffic handled by the Class I railroads in May amounted to 42,027,470,000 net ton-miles, the greatest for any May on record according to reports compiled by the Bureau of Railway Economics. This exceeded by 1,909,571,000 net ton-miles or 4.8 per cent, the previous record for May established in 1927. It also was an increase of 2,764,364,000 net ton-miles, or 7 per cent, above that for May, 1928. In the Eastern district there was an increase of 9 per cent in May, 1929, compared with the same month in 1928, while the Southern district reported an increase of 2.1 per cent. The Western district reported an increase of 6.2 per cent. Traffic for the first five months in 1929 amounted to 197,916,061,000 net ton-miles, an increase of 6 per cent above that of the corresponding period in 1928. It also was an increase of 1.2 per cent above that of the same period in 1927.

Railroads in the Eastern district for five months reported an increase of 8.7 per cent, compared with the same period in 1928, while the Southern district reported an increase of nine-tenths of one per cent. The Western district reported an increase of 4.3 per cent.

The average speed of freight trains in May was 13.3 miles per hour, which was slightly greater than that for April. This is the highest average that has ever been reached in any month.

The average daily movement per freight car in May was 32.9 miles, which exceeds the previous average for any May on record, having been 1.8 miles greater than that for May, 1928, and 2.7 miles greater than for May, 1927.

The average load per car in May was 26.7 tons, including less than carload freight as well as carload freight. This was an increase of four-tenths of a ton above that for May, 1928 but a reduction of two-tenths of a ton under May, 1927.

### Barge and Rail Joint Rate Order Modified

The Interstate Commerce Commission on July 23 made public a modification of its findings and order in Ex Parte No. 96, relating to the establishment of through routes and joint rates between the barge lines of the Inland Waterways Corporation and the rail lines, to provide: That through barge-rail and rail-barge-rail routes, and hence joint rates, need not be established except over the shortest route between the inland point of origin (or destination, as the case may be) and the port of interchange over which the lowest corresponding rate between such points applies; and that no joint rates on a commodity need be established where the corresponding all-rail rate over the direct route from or to an interior point in southern territory to or from a port of destination or origin involves at intermediate points departures from the long-and-short-haul provision of the fourth section of the interstate commerce act.

\* \* \* \*



The New Ticket Office of the Texas & Pacific in the Foreman Building, Los Angeles, Cal.

## Foreign

### Electric Locomotive Development

A special issue of the German magazine *Elektrische Bahnen*, called "Fünfzig-jahre Elektrische Lokomotive", and bearing no date except the year 1929, has been issued to commemorate the fiftieth anniversary of the electric locomotive. The first article describes the first German locomotive built by Siemens & Halske in 1879. The balance of the issue is given over to German and Swiss locomotive developments, with the exception of one article describing dynamometer tests on the electrification section of the Virginian Railway. All of the articles are written in German, with the exception of the one concerning the Virginian which appears in English with an introduction in German.

### James Milne Succeeds Sir Felix J. C. Pole

James Milne, assistant general manager of the Great Western Railway of Great Britain, has been appointed general manager of that company, succeeding Sir Felix J. C. Pole, who has become chairman of the Associated Electrical Industries, Ltd. Mr. Milne was graduated from Manchester University and entered the service of the Great Western as an apprentice in the locomotive department at Swindon in 1904. After passing through the Swindon shops, mechanical laboratory and drawing office, he was transferred to



James Milne

Paddington (London), where he served in various sections of the office of the superintendent of the line and the general manager's office. He returned to the office of the superintendent of the line in 1912, where he took charge of the passenger train running department. He was appointed chief clerk to the division superintendent at Pontypool Road in January, 1916, and then for a short period was acting division superintendent at Swansea. In 1917 he became assistant division superintendent at Plymouth.

Mr. Milne was appointed director of statistics in the Ministry of Transport in

1919, and after the passage of the Railways Act, 1921, he was selected to assist the Geddes Committee on National Expenditure. He returned to the Great Western in 1922 as assistant to the general manager and later in the same year was appointed principal assistant to the general manager. In 1923 Mr. Milne was selected by Lord Inchcape to assist the Indian Retrenchment Committee and he was one of the co-signators of their report. In March, 1924, he was appointed assistant general manager of the Great Western serving in that capacity until his recent promotion to the position of general manager.

### New Private Railway Car for Roumanian Princess

The elaborately fitted private railway car of Princess Ileana of Roumania, which has recently attracted considerable attention in European railway circles, contains seven rooms or compartments, some views of which are reproduced in the accompanying illustrations.

Of these seven compartments, five are for the Princess and her suite, while of the other two, one is for the use of the conductor and the other contains the heating apparatus.

The finish, both inside and outside of the car, is in Duco. The rooms used by the Princess and her suite are in white and the corridor is also finished in that color. The lights in the ceiling of the corridor are in silver. The compartment of the conductor and the room containing the heating apparatus are finished in brown.

In the compartments used by the Princess and her suite, the walls of the drawing room are covered with black, red and blue cretonne decorated with large flowers. The table and chairs of this room are covered with the same material and the curtains are also made of it. Indirect lighting is obtained by

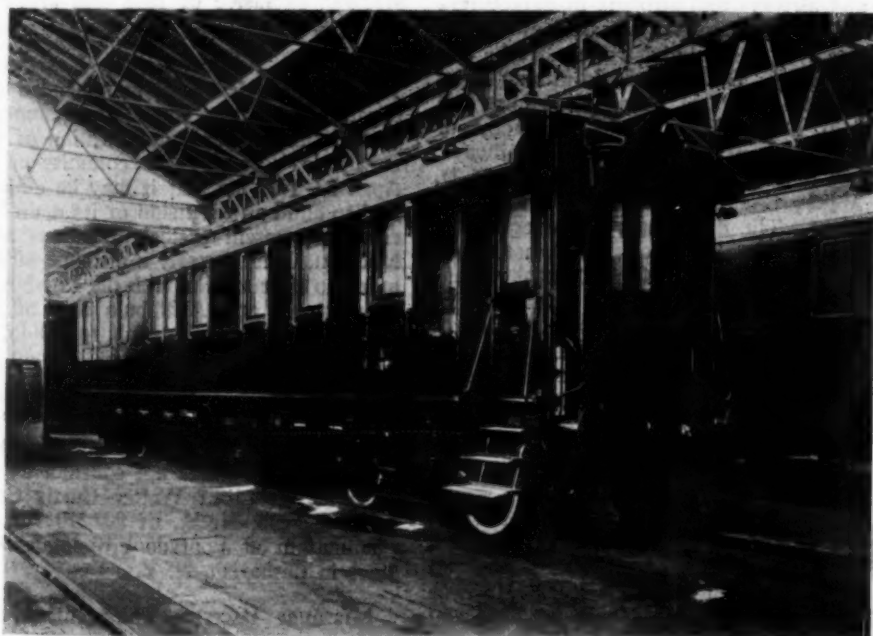
masked horizontal tubes and lamps made of old silver and alabaster shades are used. The floor is covered with oriental rugs. All fixtures, such as door knobs, etc., are made of silver. The living room-bedroom contains a couch and an



Interior View of One of Rooms

arm-chair which, together with the cushions, are upholstered in the same cretonne as is used in the drawing room. Other pieces of furniture in the living room-bedroom are a small desk and a small dressing table in walnut. There are three lighting fixtures in the ceiling, two of which are in the corners of the room. These are all in silver.

The room of the lady-in-waiting is finished in white and decorated with the same cretonne. The other two rooms for the members of the suite have the walls in white and contain beds also upholstered in cretonne.



Exterior View of the Car

## Equipment and Supplies

### Locomotives

THE ST. LOUIS SOUTHWESTERN contemplates entering the market for 10 locomotives.

THE CHICAGO, BURLINGTON & QUINCY contemplates entering the market for 25 locomotives.

THE EDWARD HINES WESTERN PINE COMPANY has ordered one 2-8-2 type locomotive from the Baldwin Locomotive Works.

THE TEXAS & PACIFIC is inquiring for 15 of the 2-10-4 type locomotives. This company is also asking for five 4-8-2 type locomotives as reported in the *Railway Age* of July 20.

THE NEW YORK CENTRAL is now inquiring for 35 oil-electric, battery locomotives to have two-axle swivel trucks and a box type cab. These are for service on the west side of New York City. In the *Railway Age* of June 8 it was reported that the company was inquiring for 42 electric locomotives.

### Freight Cars

THE CHICAGO & EASTERN ILLINOIS is inquiring for ten automobile cars.

THE GREAT NORTHERN is inquiring for 300 underframes.

THE CANADIAN PACIFIC has ordered 100 ore cars of 80 tons' capacity from the Canadian Car & Foundry Company.

### Passenger Cars

THE CHICAGO GREAT WESTERN has ordered two baggage and mail cars from the Pullman Car & Manufacturing Corporation.

### Iron and Steel

THE LOUISVILLE & NASHVILLE is inquiring for 900 tons of structural steel for an office building at Louisville, Ky.

THE CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS is inquiring for 2,000 tons of structural steel for a bridge at Terre Haute, Indiana.

THE CHICAGO & WESTERN INDIANA has ordered 825 tons of structural steel for a subway at Chicago from the American Bridge Company.

THE NEW YORK, CHICAGO & ST. LOUIS has ordered 125 tons of structural steel for a bridge at Templeton, Ind. from the American Bridge Company.



## Machinery and Tools

THE CINCINNATI, NEW ORLEANS & TEXAS PACIFIC has ordered a maintenance-of-way crane from the Orton Crane and Shovel Company.

## Signaling

THE NEW YORK CENTRAL has placed an order with the General Railway Signal Company covering two sets of intermittent inductive auto-manual train control engine equipments for application to gas electric motor cars.

THE CHICAGO, BURLINGTON & QUINCY has ordered from the General Railway Signal Company a dispatching machine for the remote control of ends of passing siding at Buda, Ill. This machine will

have four levers and will directly control six signals and two switches.

THE BINGHAM & GARFIELD has placed an order with the General Railway Signal Company covering materials for a direct-current automatic block signal installation at Magna, Utah. This order includes three type D color-light signals together with the necessary relays, transformers, etc.

THE ILLINOIS CENTRAL has ordered from the General Railway Signal Company a dispatching machine for the remote control of yard outlet signals, switch at end of double track and head block signal at next adjacent passing siding. This machine will have four working levers, from which eight signals and one switch will be directly controlled, and will be located at Clinton, Ill.

## Supply Trade

W. H. Kretz has joined the transformer sales division of the Wagner Electric Corporation, St. Louis, Mo.

The Manganese Steel Rail Company has moved its office from 30 Church street to 230 Park avenue, New York City.

Benjamin Dixn, who has been sales manager of the Industrial Works of Bay City, Mich., since 1900, is now connected with the Ohio Locomotive Crane Company as district sales manager in charge of the Detroit and Chicago offices with headquarters at Detroit.

The Rudel-Ryder Machinery Company, Ltd., 159 Bay street, Toronto, Ont., has been appointed agent of the Geometric Tool Company, New Haven, Conn., for the sale of Geometric self-opening dies, collapsing taps and threading machines in the Province of Ontario. They succeed the F. F. Barber Machinery Company.

D. R. Coleman having been granted six months' leave of absence, J. E. Buckingham has been appointed acting manager of the railroad department of the Worthington Pump & Machinery Corporation, with headquarters at Harrison, N. J., D. S. Ellis, recently of the New York Central, has joined the railroad department and has been appointed eastern district sales manager, and J. M. Lammedee has been appointed western district sales manager.

Phil Arnold, district sales manager of the Garlock Packing Company, Palmyra, N. Y., has been appointed vice-president in charge of sales, with headquarters at 2111 Terminal Tower, Cleveland, Ohio. Cecil R. Hubbard has been appointed vice-president in charge of production, with headquarters at Palmyra. Robert M. Waples has been appointed secretary and manager of the service department, with headquarters at Pal-

myra. Robert M. Perkins has been appointed district sales manager of the Cleveland district, with headquarters at 1276 Superior avenue, Cleveland, to succeed Mr. Arnold.

The title of the railroad and government department of the Johns-Manville Corporation, New York, has been changed to the transportation and government department, and a new sales organization plan has been put into effect. This department comprises sales and engineering service to railroads, airways and airplane manufacturers, government, electric railways, and motor coach lines and motor coach manufacturers. George A. Nicol, Jr., vice-president in the corporation, formerly head of the railroad and government department, heads the new department with direct charge of sales to railroads and airways and airplane manufacturers and C. S. Clingman is assistant to Mr. Nicol in the administration of the department. G. K. Bradfield is staff manager in charge of government sales and J. S. Doyle, Jr. assistant staff manager in charge of sales to electric railways, bus lines and bus manufacturers. P. D. Mallay is chief engineer of the department. The division sales managers are as follows: R. P. Townsend, eastern division, New York; C. E. Murphy, Central division, Cleveland, Ohio; J. C. Younglove, western division, Chicago; W. J. Hennessey, Pacific division, San Francisco, Cal.; L. Papineau, Canadian division, Montreal, Que.

## Obituary

C. S. Murray, manager of the St. Louis, Mo., office of the Dearborn Chemical Company, Chicago, died on July 12 from heart trouble. He was born in Ireland on March 24, 1864 and had been manager of the St. Louis office for the past 18 years.

## Construction

BIRMINGHAM SOUTHERN.—A contract has been let to E. C. Coston for the construction of a one-story brick and steel freight station at Birmingham, Ala.

CANADIAN NATIONAL.—A contract for the erection of the steel for the new 550-room hotel at Vancouver, B. C., has been let to the Dominion Bridge Company, Ltd. The construction of the hotel will involve the use of about 5,000 tons of steel.

DELAWARE & HUDSON.—A contract has been awarded to W. S. Rae, Pittsburgh, Pa., for the construction of bridge abutments and superstructure for highway crossing over this company's tracks and those of the Boston & Maine south of Ushers, N. Y. The project will involve an expenditure of approximately \$41,700.

DELAWARE & HUDSON.—The Dowlings grade crossing on this company's lines one-third mile south of its Lake George, N. Y. station has been placed on the 1929 elimination program of the New York Public Service Commission. The cost of the project has been estimated at \$100,000.

DELAWARE & HUDSON.—This company has submitted to the New York Public Service Commission a new plan in connection with the proposed elimination of two grade crossings on its lines in Rotterdam and Schenectady, N. Y. The plan calls for the construction of an overhead highway bridge at Fort Hunter road in Rotterdam, with a marginal highway running to the Mill road, the latter being closed. The estimated cost of this project is \$169,000, exclusive of property damages. It is proposed to eliminate the Campbell avenue crossing in Schenectady by an overhead bridge, estimated to cost \$133,000, exclusive of land and property damages.

FAIRPORT, PAINESVILLE & EASTERN.—This company has filed an amended application with the Interstate Commerce Commission asking a modification of the certificate issued by the commission on April 28, 1927, so that it may be authorized to build an extension of its main line from its present easterly terminus near Madison, Ohio, easterly a distance of 13.9 miles, to a connection with the Pittsburgh, Youngstown and Ashtabula line of the Pennsylvania near Austintown, Ohio, in lieu of the construction of a spur or branch track.

LEHIGH VALLEY.—The New York Public Service Commission has advised this company that it does not consider as excessive the bid of Walter Curtis Company, Geneva, N. Y., of \$27,370 for the elimination of a grade crossing on its lines in Catharine, N. Y.

MISSOURI PACIFIC.—The general contract for the remodeling of the first floor and basement of the office building at St.

Louis, Mo., to provide quarters for a bank has been let to the Humes Deal Company, St. Louis, at a cost of about \$150,000.

**NEW YORK CENTRAL.**—The New York Public Service Commission has ordered the elimination of the remaining street grade crossings on this company's lines in Buffalo, N. Y., west and north of Exchange street station. The elimination, according to plans filed, is to be accomplished by a change of alignment in the company's tracks and the carrying of Erie and Genesee streets over the relocated tracks on overhead structures. Four street crossings will be eliminated. The Buffalo Grade Crossing and Terminal Station Commission will prepare an estimate of cost in accordance with the plan.

**NEW YORK, NEW HAVEN & HARTFORD.**—The Carrol and Main street crossings on this company's lines, south of Hopewell Junction, N. Y., have been named for consideration on the 1929 grade crossing elimination program of the New York Public Service Commission. The estimated cost of elimination has been placed at \$130,000.

**PENNSYLVANIA.**—A contract has been awarded to the Arthur McMullen Company, New York, for the work of eliminating two grade crossings in Phelps, N. Y., at an approximate cost of \$57,000.

**PENNSYLVANIA.**—The New York Public Service Commission has approved plans covering the elimination of the Phelps-Clifton Springs crossing on this company's lines south of Phelps Junction, N. Y., estimated to cost \$112,900.

**PENNSYLVANIA.**—The Interstate Commerce Commission has authorized the Pittsburgh, Cincinnati, Chicago & St. Louis to construct a 1.2-mile extension from its main line at Duck Creek, Ohio, to a connection with the Baltimore & Ohio at East Norwood; estimated cost, \$1,029,730. This construction is to be undertaken to enable the Pennsylvania to gain entrance to the new Cincinnati Union Terminal.

**PORTLAND TERMINAL.**—This company will build an extension to its Wharf No. 3 at Portland, Me., at an estimated cost of \$28,000. A contract for the dredging work has been awarded to the Bay State Dredging & Contracting Company, Boston, Mass. The Wharf work will be done with company forces.

**RICHMOND, FREDERICKSBURG & POTOMAC.**—Work has been authorized for the extension of seven tracks in this company's southbound receiving yard at Potomac Yard, Va., making necessary the relocation of other tracks and the extension of a 24 ft. arch culvert. The cost has been estimated at about \$138,000.

**SANTA FE, SAN JUAN & NORTHERN.**—The Interstate Commerce Commission has authorized this company to operate a line from San Ysidro northward to Tilden, N. M., 33.2 miles, and the construction of an 11.3-mile extension northward to Cuba, N. M., and to operate under

trackage rights over the Santa Fe North-western between San Ysidro and Bernalillo, 23 miles. The estimated cost of the extension is \$133,115.

**SOUTHERN PACIFIC.**—The Houston, (Tex.) City council on July 18 through the action of the mayor entered into an agreement with this company for the construction of a passenger terminal between Washington avenue and Kessler street and between Milan and Elder streets in that city. The agreement includes two contracts, the first of which involves the placing of the station building in Washington avenue, the purchase of land to provide a new route for the avenue in front of the station and the relocation of a section of Buffalo bayou. The second contract, an alternate one, provides for the placing of the station alongside Washington avenue in case it is not found feasible to purchase additional property to relocate the avenue and the bayou. Both contracts involve the joint construction by the city and the railroad of highway subways under Southern Pacific tracks on Milan street and Houston avenue. Including track changes and the construction of a mail and an express building the entire project is estimated to involve an expenditure of \$7,000,000.

**TEXAS & PACIFIC.**—This company plans to file an application with the Interstate Commerce Commission for permission to construct an extension of the Abilene & Southern from Ballinger, Tex., to San Angelo, 38 miles, at a cost of about \$1,500,000. This project also involves the reconstruction of the Abilene & Southern between the Texas & Pacific main line at Abilene, Tex., and Ballinger, 54 miles.

**UNION TERMINALS, INC.**—H. A. Wood, of Los Angeles, Calif., has applied to the Interstate Commerce Commission on behalf of this company, requesting it to issue an order and enter a certificate that public convenience and necessity require the construction of a union terminal station on the so-called Plaza site and connecting lines in the city of Los Angeles. It is proposed, the application says, to construct a terminal to be leased to the steam railroads entering the city and that the company shall have an authorized capital stock of \$5,000,000 and an authorized bond issue of \$29,000,000. Applicant requests the commission to defer official action on the application until it has received the decision of the Supreme Court of the United States in the case in which the city of Los Angeles is seeking a writ of mandamus to compel the commission to issue an order requiring the construction of a union station at Los Angeles.

**PIG IRON.**—Two articles on the effect on castings of nickel-chromium, by Dr. Richard Moldenke, are contained in the revised edition of the Mayari pig iron book issued by the Bethlehem Steel Company, Bethlehem, Pa. Silvery Mayari, a new general-purpose pig iron for making super-strength castings, is briefly described in booklet No. 54.

## Financial

**ATCHISON, TOPEKA & SANTA FE.—Trackage Rights.**—The Interstate Commerce Commission has authorized the Gulf, Colorado & Santa Fe and/or the Cane Belt, to operate over the tracks of the Galveston, Harrisburg & San Antonio from Don Tol, Tex., to Wharton Junction and Rosenberg, approximately 37 miles, and between Guy and Rosenberg, 15 miles; and it has authorized the Texas & New Orleans and/or the Galveston, Harrisburg & San Antonio to operate over an extension of the Cane Belt from Don Tol to Guy, 11.4 miles, and from Guy to Thompsons, 15.9 miles.

**BALTIMORE & OHIO.—Unification Plan.**—In a letter to Commissioner Meyer this company has advised the Interstate Commerce Commission of its willingness to amend its application for authority to acquire control of lines in eastern territory by omitting the Chicago, Indianapolis & Louisville as one of the lines it desires to acquire, in view of the opposition of the Monon and of the Southern and Louisville & Nashville, which jointly control it.

**CINCINNATI UNION TERMINAL COMPANY.—Securities.**—This company has applied to the Interstate Commerce Commission for authority to issue \$3,000,000 of preferred stock and \$5,250,000 of short-term notes, to supply cash with which to pay in part for the acquisition of property and the construction of the union passenger station at Cincinnati.

**COLORADO & SOUTHERN.—Abandonment.**—Examiner O. D. Weed of the Interstate Commerce Commission has recommended in a proposed report that this company be authorized to abandon its narrow-gauge line and connecting branches in Douglas, Jefferson, Park, Summit and Lake counties, Colo., a total of 185.05 miles. The report recommends dismissal of an application of the city and county of Denver, Colo., for a certificate authorizing the abandonment of a portion of the line in Douglas and Jefferson counties, conditioned upon the construction of a substitute line.

**ERIE.—Equipment Trust Certificates.**—The Interstate Commerce Commission has authorized an issue of \$8,370,000 of equipment trust certificates, to be sold at not less than 94.847 per cent of par and accrued dividends.

**ERIE.—Equipment Trust Certificates.**—A syndicate headed by the First National Corporation of Boston, Mass., is offering \$8,370,000 of equipment trust of 1929 certificates of this company, bearing interest at 4½ per cent. The issue is priced to yield from 6 per cent to 6.15 per cent, depending upon the date of maturity and is contingent upon the securing of approval from the Interstate Commerce Commission.



**FONDA, JOHNSTOWN & GLOVERSVILLE.—Abandonment.**—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Broadalbin Junction to Northville, N. Y., 12 miles.

**GEORGIA & FLORIDA.—Acquisition of Statesboro Northern.**—The Interstate Commerce Commission has authorized this company to acquire the Statesboro Northern by extension of its lease, which expired on June 2, for a period of five years.

**GRAND TRUNK WESTERN.—Car Ferry Service.**—The Interstate Commerce Commission has made public a proposed report by Examiner Molster recommending that the commission approve the operation by the Grand Trunk Milwaukee Car Ferry Company or the Grand Trunk Western of car-ferry service across Lake Michigan between Muskegon, Mich. and Milwaukee, Wis., and also the operation by the Detroit, Grand Haven & Milwaukee, under trackage rights, over lines of other roads in Ottawa and Muskegon counties, Mich.

**GULF, MOBILE & NORTHERN.—Bonds.**—This company has applied to the Interstate Commerce Commission for authority to issue \$2,300,000 of 5 per cent bonds, Series C, to be retained in its treasury.

**GULF, MOBILE & NORTHERN.—Acquisition.**—The Interstate Commerce Commission has authorized this company to acquire the properties, rights and franchises of the Meridian & Memphis, the Jackson & Eastern and the Birmingham & Northwestern, companies which it controls through stock ownership. The proposed price for the Meridian company was \$854,159, but the Commission authorized only \$26,250 for the common stock and \$60,000 for the preferred stock, instead of \$150,000 for each as was proposed. An item of \$129,098 of liabilities paid by the Gulf, Mobile & Northern was also disallowed. The price authorized to be paid for the Jackson & Eastern is \$2,987,028 and \$590,283 for the Birmingham & Northwestern.

**MISSOURI & NORTH ARKANSAS.—Receivers Certificates.**—The Interstate Commerce Commission has authorized this company to issue \$500,000 of 6 per cent receivers certificates to be sold at not less than 98.

**NASHVILLE, CHATTANOOGA & ST. LOUIS.—Stock Dividend.**—This company has applied to the Interstate Commerce Commission for authority to issue as a stock dividend 96,000 shares of its common stock, to capitalize expenditures out of income for additions and betterments. This will increase the outstanding stock issue from \$16,000,000 to \$25,600,000.

**NEW YORK, CHICAGO & ST. LOUIS.—Equipment Trust.**—The Interstate Commerce Commission has authorized this company to assume obligation and liability in respect of \$2,400,000 of equipment trust of 1929 certificates bearing interest at 4½

per cent, the certificates to be sold to the highest bidder, a syndicate headed by Harrison, Smith & Co., at 95.773, which will make the average annual cost to the railroad 5.1856 per cent. The certificates will mature in installments from 1930 to 1944.

**PENNSYLVANIA.—Trackage Rights.**—The Interstate Commerce Commission has authorized this company and the Norfolk & Western to operate over the Baltimore & Ohio from East Norwood, Ohio, to a connection with the tracks of the Cincinnati Union Terminal, approximately 7 miles, in order to gain entrance into the new Cincinnati Union Terminal.

**PENNSYLVANIA.—Bonds of P. B. & W.**—The Interstate Commerce Commission has authorized the Philadelphia, Baltimore & Washington to issue \$7,479,000 of general mortgage bonds, Series C, the bonds to be delivered at par to the Pennsylvania in partial reimbursement for capital advances. The Pennsylvania has been authorized to assume obligation and liability, as lessee, in respect of these bonds. The bonds will bear interest at 4½ per cent and will mature in 1977.

**PEORIA & EASTERN.—Annual Report.**—The annual report of this company for 1928 shows net income after interest and other charges of \$372,406, as compared with net income of \$409,051 in 1927. Selected items from the income statement follow:

PEORIA & EASTERN		Increase or Decrease	
	1928	1927	
Average Mileage operated	211.44	211.44	.....
RAILWAY OPERATING REVENUES	4,075,064	3,902,748	172,315
Maintenance of way	527,480	537,898	—10,418
Maintenance of Equipment	811,219	724,665	86,554
Transportation	1,659,804	1,606,152	53,651
TOTAL OPERATING EXPENSES	3,224,536	3,113,664	110,872
Operating ratio	79.13	79.78	— .65
NET REVENUE FROM OPERATIONS	850,527	789,084	61,443
Railway tax accruals	276,142	218,696	57,445
Railway operating income	573,552	569,747	3,805
Equipment rents—Net Dr.	146,786	136,255	10,531
Joint facility rents—Net Dr.	72,050	53,668	18,382
NET RAILWAY OPERATING INCOME	354,716	379,824	— 25,108
Non-operating income	38,348	46,664	— 8,316
GROSS INCOME	393,064	426,487	— 33,423
TOTAL DEDUCTIONS FROM GROSS INCOME	20,658	17,436	3,222
NET INCOME	372,406	409,051	— 36,646

**RED RIVER & GULF.—Abandonment.**—The Interstate Commerce Commission has authorized this company to abandon one mile of line between Louisiana Junction and Concrete Hill, La., and to abandon operation under trackage rights between Concrete Hill and Bolton, 0.7 miles, and operation under trackage rights from Cocodrie to Meridian, 4.3 miles.

**SHARPSVILLE.—Abandonment.**—This company and its receiver have applied to

the Interstate Commerce Commission for authority to abandon the operation of its line, from Sharpsville to Wilmington Junction, Pa., 16.7 miles.

**SOUTHERN PACIFIC.—Lease of N-C-O.**—This company has applied to the Interstate Commerce Commission for authority to lease and operate directly the line of the Nevada-California-Oregon, from Wendel, Calif., to Lakeview, Ore., 154 miles. It now controls the company through stock ownership.

**WESTERN MARYLAND.—Acquisition.**—This company has applied to the Interstate Commerce Commission for authority to acquire control of the Chaffee Railroad, which has 3.5 miles of line from Chaffee, W. Va., to Vindex, Md., by purchasing its stock for a cash payment of \$100,000 and the assumptions of debts to the amount of \$110,000.

**WHEELING & LAKE ERIE.—Cleveland Terminal Arrangements Authorized.**—The Interstate Commerce Commission on July 23 made public a report and certificate authorizing this company to abandon a part of its line, including its Ontario street passenger station at Cleveland, Ohio, and to acquire passenger station facilities and service in the union depot of the Cleveland Union Terminals Company and operate over its connecting tracks and passenger siding. The certificate was issued after a vigorous fight against the arrangement had been made by the Pittsburgh & West Virginia. Commissioners Eastman and Taylor dissented and Commissioners Lewis and McManamy wrote separate opinions concurring. The report finds that the contentions of the protestant that the actions of directors elected by the votes of stock held by the Baltimore & Ohio, New York Central and New York, Chicago & St. Louis were illegal, because of the finding of fact made by the commission on March 11, 1929, that the stock was held in violation of the Clayton law, were without merit.

### Dividends Declared

Buffalo, Rochester & Pittsburgh.—Common, \$2.00, semi-annually; Preferred, \$3.00, semi-annually, both payable August 15 to holders of record August 5.

International Railways of Central America.—Preferred, \$1.25, quarterly, payable August 15 to holders of record July 31.

Missouri-Kansas-Texas.—Preferred, \$1.75, quarterly, payable September 30 to holders of record September 14.

New Orleans, Texas & Mexico.—\$1.75, quarterly, payable September 3 to holders of record August 15.

### Average Prices of Stocks and of Bonds

	July 23	Last week	Last year
Average price of 20 representative railway stocks	156.66	155.61	117.46
Average price of 20 representative railway bonds	90.23	90.14	92.59

**PICTURE VISITS.**—An eight-page rotogravure, pictorial bulletin issued by the American Rolling Mill Company, illustrates numerous examples of the various uses made of ingot iron in industry. All of the photographs, which cover all manner of applications from gas receivers to locomotive tenders, are accompanied by explanatory captions.

## Officers

### Executive and Legal

**Frank W. Webster**, vice-president and general manager of the Peninsular Railway Company, the San Jose Railroads, the Fresno Traction Company, the Stockton Electric Railroad Company and the Visalia Electric Railroad Company, subsidiaries of the Southern Pacific, has been elected president of these companies, with headquarters as before at San Francisco, Cal., succeeding **Paul Shoup**.

**A. T. Mercier**, who has been elected vice-president and general manager of the Pacific Electric, with headquarters at Los Angeles, Cal., has been connected with the Southern Pacific and a subsidiary, the San Diego & Arizona, for 25 years. He was born on December 11, 1881, at New Orleans, La., and graduated from Rugby Academy and Tulane University, completing a course in civil engineering at the latter school in 1903. He entered railway service in January, 1904, as a transitman and clerk to a roadmaster on the Southern Pacific at Los Angeles. During the following 13 years Mr. Mercier was advanced successively through the positions of assistant gang foreman at Los Angeles, assistant engineer in charge of reconstruction work on the Colorado river, general foreman and engineer of bridges and buildings in charge of steel bridge



A. T. Mercier

construction, engineer and general foreman in charge of terminal construction work at San Pedro, Cal., and Los Angeles, assistant division engineer of the Los Angeles division, assistant district engineer of the Southern district and division engineer of the San Joaquin division and the Los Angeles division. In February, 1917, he was appointed assistant superintendent of the Shasta division at Dunsmuir, Cal., then being advanced to superintendent of the Portland division at Portland, Ore., in September, 1918. He was appointed general manager of the San Diego & Ari-

zona, with headquarters at San Diego, Cal., in November, 1921, and in April, 1927, he was also elected president of that railroad. His election as vice-president and general manager of the Pacific Electric became effective on July 3.

**David W. Pontius**, who has been elected president of the Pacific Electric, with headquarters at Los Angeles, Cal., has spent 42 years in railway service. He was born at Upper Sandusky, Ohio, in 1873 and obtained his first railway experience at the age of 13 years as a clerk in the office of a track supervisor on the Pennsylvania. Later he served on the Chicago Great Western, the Northern Pacific and the Oregon-Washington Railroad & Navigation Company.



David W. Pontius

entering the service of the Southern Pacific in 1891. With that railway he advanced successively through the positions of telegraph operator, station agent, trainmaster and district freight and passenger agent and in 1908 he was appointed traffic manager of the Los Angeles Pacific Railway. With the consolidation of that railroad and six others in the southern California in 1911 to form the Pacific Electric he was appointed traffic manager of the latter company. In December, 1917, Mr. Pontius was appointed general manager of the San Diego & Arizona, with headquarters at San Diego, Cal., where he remained until November, 1921, when he returned to the Pacific Electric as vice-president and general manager. His election to president of the Pacific Electric became effective on July 3.

**J. R. Barse**, general counsel of the Chicago & Western Indiana, has been elected vice-president and general counsel of that road and the Belt Railway Company of Chicago, with headquarters as before at Chicago.

### Operating

**J. M. Chandler**, trainmaster on the New Orleans division of the Illinois Central at Baton Rouge, La., has been promoted to superintendent of the Vicksburg division, with headquarters at Vicksburg, Miss., succeeding **J. C.**

**Stamm**, who has retired from active service. **W. M. McKay**, trainmaster on the Memphis division has been transferred to the New Orleans division to replace Mr. Chandler. **T. D. Beven**, yardmaster at Hattiesburg, Miss., has been promoted to trainmaster of the Memphis division, succeeding Mr. McKay.

**R. L. James** has been appointed assistant trainmaster of the Central division of the Missouri Pacific, with headquarters at Van Buren, Ark.

**B. R. Mayer** has been appointed assistant trainmaster of the Logansport division of the Pennsylvania, with headquarters at Logansport, Ind.

**B. S. Baumann**, trainmaster of the Shasta division of the Southern Pacific at Redding, Cal., has been transferred to the Stockton division at Tracy, Cal., succeeding **W. S. Joy**, who has been transferred to the Western division at Oakland Pier, Cal. **G. H. Kilborn** has been appointed trainmaster of the Shasta division at Dunsmuir, Cal.

### Traffic

**L. I. Hause**, perishable traffic representative for the Chicago & Alton at San Francisco, Cal., has been promoted to general agent at that point.

**A. S. Matteson**, general freight and passenger agent of the Detroit & Mackinac, has been appointed traffic manager, with headquarters as before at Alpena, Mich.

**W. H. D. Snazel** has been appointed Canadian freight agent of the New York Central, with headquarters at Toronto, Ont., succeeding **J. W. Hickson**, who has retired.

**H. A. Coughenour**, city coal and freight agent for the New York Central at Chicago, has been promoted to general agent of the coal and ore department at the same point, succeeding **W. L. Harper**, deceased.

**Robert J. James** has been appointed general baggage agent of the Chicago & North Western, with headquarters at Chicago, succeeding **H. G. Graves**, who will retire on August 1, after 48 years in the service of that railway.

**J. C. Hitherington** has been appointed general advertising agent of the Wabash, with headquarters at St. Louis, Mo., succeeding **James H. Higgs**, who resigned on July 15 to become advertising director of the radio broadcasting organization, KMOX, at St. Louis.

**R. C. Kerr**, who has been promoted to manager of the industrial department of the Chicago & North Western, with headquarters at Chicago, has been connected with that railway for 30 years. He was born at Pecatonica, Ill., in 1882 and entered the service of the North Western as a clerk in the ticket office at Chicago. After serving as a telegraph operator and local agent at vari-



ous points on the Galena division and in the office of the cashier, he was advanced to traveling auditor in 1909. In 1917 Mr. Kerr became local freight agent at Milwaukee, Wis., and in 1922 he was advanced to general agent at



R. C. Kerr

that point. Two years later he was appointed division freight and passenger agent at Green Bay, Wis., where he remained until 1927 when he was promoted to assistant general freight agent, with headquarters at Chicago. His further promotion to manager of the industrial department became effective on July 1.

### Purchases and Stores

J. H. Reeder, assistant district engineer of the Quebec district of the Canadian Pacific, with headquarters at Montreal, Que., has been appointed general tie agent, with headquarters at the same point, succeeding B. M. Winegar, who resigned to enter the service of another company. F. A. Cousins has been appointed assistant general tie agent, with headquarters at Montreal.

### Mechanical

George L. Ernstrom, assistant master mechanic on the Northern Pacific at Staples, Minn., has been promoted to master mechanic at Pasco, Wash., succeeding J. A. Marshall, who has been transferred to Glendive, Mont. Mr. Marshall succeeds J. W. Matheson, who retired from active service on July 1. Luke J. Gallagher, road foreman of engines at Missoula, Mont., has been promoted to assistant master mechanic at Staples, replacing Mr. Ernstrom.

J. J. Maginn, who has been promoted to superintendent of motive power of the New York, Chicago & St. Louis, with headquarters at Cleveland, Ohio, was born in New York on August 15, 1878. He was educated in the public schools of Norwalk, Ohio, and entered railroad service in 1895 with the Wheeling & Lake Erie as a call boy at Norwalk. In the same year he became a machinist apprentice on the Nickel

Plate, completing his apprenticeship in 1898. During the period from 1898 to 1906 Mr. Maginn served as a journeyman machinist on the Wheeling & Lake Erie, the Illinois Central and the Chicago Great Western and in 1906 he was appointed enginehouse foreman for the Lake Erie & Western (now a part of the Nickel Plate) at Indianapolis, Ind. A year later he was appointed enginehouse foreman at Shelby Street enginehouse of the Cleveland, Cincinnati, Chicago & St. Louis at Indianapolis where he remained until 1911 when he accepted a position as enginehouse foreman for the Baltimore & Ohio at New Castle, Pa. In 1912 Mr. Maginn was appointed general foreman for the Cincinnati Northern at Van Wert, Ohio, and in 1914 he was promoted to master mechanic on that road. In 1919 he was appointed superintendent of motive power of the Lake Erie & Western at Lima, Ohio, and in 1922, when that railroad became a part of the New York, Chicago & St. Louis, he was appointed master mechanic of the Lake Erie & Western district of the Nickel Plate. In 1927 Mr. Maginn was transferred to the Nickel Plate district, with headquarters at Conneaut, Ohio, which position he held at the time of his promotion to superintendent of motive power.

### Obituary

George A. Sharp, who served as superintendent and purchasing agent of the Prince Edward Island (now part of the Canadian National), with headquarters at Charlottetown, P. E. I., from 1897 to 1911, died at his home at Vancouver, B. C., on July 16 at the age of 77 years.

George K. McCormick, assistant engineer on the Cumberland Valley division of the Louisville & Nashville at Middlesboro, Ky., died in a hospital in that city on July 18 after an illness of several months. He had been with the Louisville & Nashville about 40 years.

Charles Henry Stevens, who for more than 35 years was paymaster of the St. Louis, Iron Mountain & Southern and the Missouri Pacific, of which the former road is now a part, with headquarters at St. Louis, Mo., died on July 17 at the age of 81 years. Mr. Stevens retired from active service in 1924.

James Horsburgh, Jr., retired general passenger agent of the Southern Pacific, died on July 21 at his home at Palo Alto, Cal., at the age of 73 years. He retired from active service in 1915 after having served for 9 years as general passenger agent at San Francisco, Cal., and for 18 years prior to that time as assistant general passenger agent.

William D. Boyce, superintendent of the Missouri River division of the Minneapolis, St. Paul & Sault Ste. Marie, who died on June 12, had been connected with that railway for 13 years. He was born on February 29, 1880, at Glencoe, Minn., and became an agent and operator on the Soo line in 1906. Five years later he was advanced to chief dispatcher at Thief River Falls, Minn., and in 1916 he was transferred to Superior, Wis. From 1917 to 1919 Mr. Boyce served in the Russian Railway Service Corps of the United States Army, then re-entering the service of the Soo line as a trainmaster. He was promoted to superintendent at Bismarck, N. D., in May, 1928.

\* \* \* \*



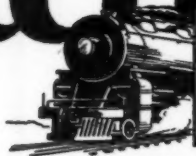
At the Gateway to Glacier National Park

A cowboy messenger is there kept busy carrying telegrams to and from the railway and hotel which is a quarter of a mile from the Great Northern station.

Two Sections—Section Two



# Railway Age

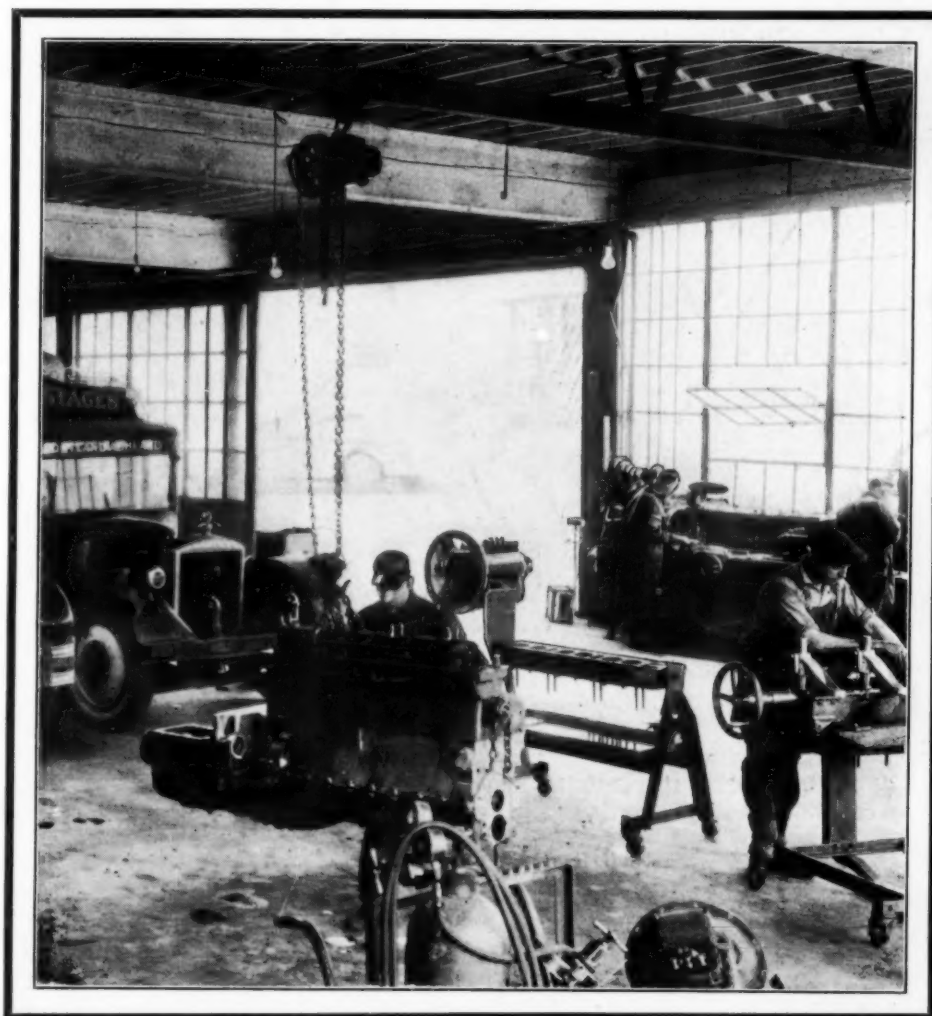


## Motor Transport Section

*Devoted to the  
Co-ordination of Railway and Highway Service*



JULY 27, 1929

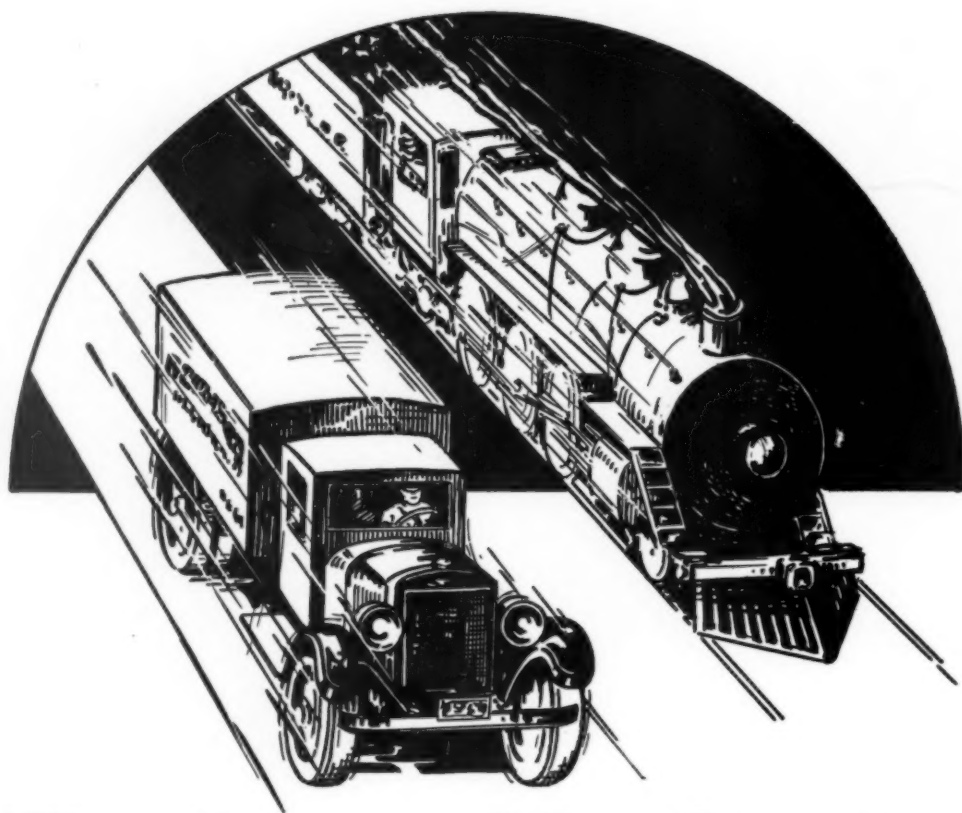


Quick return on investment in shop equipment for motor coach maintenance secured by Oregon Stages. See page 282.

**In this issue:** Cost of Motor Coach Operation Analyzed; Are Motor Coach Taxes Too High; Advertising the Greyhound Lines; Uniform Specifications Code Revised.

---





## Railway Methods on the Highway

Railways were hauling cargoes as a *business* long before the truck evolved from an automobile. The truck today, however, is supplementing railway work and the same *business principles* apply.

Railways, for example, found that air brakes were "good business" as well as an essential with regard to safety. And truck fleet operators are finding that *automotive* air brakes are equally

"good business," for they reduce the cost of hauling and of upkeep while providing greater safety at one and the same time.

Westinghouse Automotive Air Brakes, in other words, are an economic factor as well as a safety factor and, to adopt railway methods on the highway is to increase your payload income in all forms of heavy duty transportation service.



WESTINGHOUSE AIR BRAKE COMPANY  
AUTOMOTIVE BRAKE DIVISION, WILMERDING, PA.

# Railway Age

Motor Transport Section  
Devoted to the  
Coordination of Railway and Highway Service

Vol. 87 July 27, 1929 No. 4  
Name Registered U. S. Patent Office



## Contents

### Complete Shop Equipment Keeps Motor Coach Maintenance Costs Low ..... Page 282

R. W. Lemen, president and general manager, Oregon Stages, Inc., tells of quick return on investment in machines and tools that is secured by this Southern Pacific subsidiary.

### Good Returns from Special Party Service ..... 294

An article in which A. T. Warner, general manager in charge of traffic, Public Service Co-ordinated Transport, discusses the problem of building up the use of equipment which is normally idle on Saturdays and Sundays.

### The Motor Truck a Helper, Not a Competitor of the Railways ..... 297

A. J. Brosseau, president, Mack Trucks, Inc., and vice-president, National Automobile Chamber of Commerce, finds that truck furnishes a type of service which railways are not equipped to render.

#### EDITORIALS

The Uniform Motor Coach Specifications Code .....	279
What Is So Mysterious About Motor Transport? .....	280
Save Money Through Spending Money for Shop Equipment .....	280
Boston & Maine Motor Truck Operations....	280
The Motor Truck—A Helper or a Competitor of the Railways? .....	281

#### COMMUNICATIONS ..... 281

#### GENERAL ARTICLES

Complete Shop Equipment Keeps Motor Coach Maintenance Costs Low, by R. W. Lemen .....	282
Trailers and Semi-Trailers, by Fred B. Lautzenheiser .....	286
Uniform Specifications Code Revised .....	287
Good Returns from Special Party Service, by A. T. Warner .....	294

#### GENERAL ARTICLES—Continued

The Motor Truck a Helper, Not a Competitor, of the Railways, by A. J. Brosseau .....	297
Advertising the Greyhound Lines, by W. R. Fowler, Jr. ....	299
Cotton Belt Uses Special Coach in Development Work .....	302
Business Science Applied to Motor Truck Operation, by Nathaniel Mallouf .....	303
Are Motor Coach Taxes Too High? by L. A. Rossman .....	305
Cost of Motor Coach Operation Analyzed ...	307

#### NEW EQUIPMENT

Studebaker Model 111 Coach .....	310
Büssing German-Built Chassis Powered with a 100-Hp. Engine .....	312

#### "QUESTIONS AND ANSWERS" ..... 314

#### NEWS OF THE MONTH ..... 316



THE PENN-OHIO SYSTEM  
THE PENNSYLVANIA-OHIO POWER & LIGHT COMPANY  
PENNSYLVANIA-OHIO PUBLIC SERVICE CORPORATION  
PENNSYLVANIA POWER COMPANY

R. N. GRAHAM  
MANAGER OF RAILWAYS

Youngstown, Ohio,  
Feb. 26, 1929.

Bender Body Company,  
Cleveland, Ohio.

Gentlemen:

The transportation properties operated under the general name of the Penn-Ohio System, have purchased altogether, 99 bus and coach bodies from the Bender Body Company. A number of these bodies were purchased in 1922 and many of them have been in use for a period of five years.

Fifty-seven of these bodies are in use in the city of Youngstown and as our schedules require very nearly this number of buses, they are in nearly constant, daily service. The manner in which these bodies have stood up under severe service and the ease in which they can be kept in good appearance has been very satisfactory to the company.

We have found that the Bender Body Company is a leader in adopting the latest improvements in body design and on each successive order that we have placed for bodies, we have had the satisfaction of feeling that the product we have bought is the last word in modernity.

We have always found the Bender organization responsive to suggestions that would improve the merchandising qualities of their buses. I have attempted to convey the idea in this letter that, as far as this company is concerned, the Bender Company has achieved customer-satisfaction.

Yours very truly,

*R. N. Graham*  
R. N. Graham,  
Manager of Railways.

RNG/ET

**F**OR the past seven years we have been supplying buses to the Penn-Ohio System, noted for its able management and progressive policies.

It is a source of gratification to realize that Bender Bodies have possibly contributed in some degree to this company's successful record.

THE BENDER BODY CO.

W. 62nd and Denison,

Cleveland, Ohio



# Railway Age

**Motor Transport Section**  
*Devoted to the  
Co-ordination of Railway and Highway Service*

Vol. 87

July 27, 1929

No. 4

## The Uniform Motor Coach Specifications Code

TWO years ago a committee composed of the representatives of the National Automobile Chamber of Commerce, the Society of Automotive Engineers, the Motor Vehicle Conference Committee, and other organizations began the formulation of a uniform code of motor coach specifications. The purpose of this committee was to devise a set of motor coach specifications which would guarantee to the public reasonably permanent, sanitary, safe and comfortable motor coach transportation, with a view to having such specifications used as the basis of regulation in the various states. After many months of work, such a code was devised and drawn up in such form as to facilitate its adoption as a whole by the state regulatory commissions. A final meeting for the revision of the code was held at Washington, D. C., on June 20 and 21, at which representatives of virtually all organizations which would be affected in one way or another by the general adoption of the code by the various states were in attendance. Out of this meeting came the code in its finally revised form. There remains to be secured the official endorsement of the code by the various organizations involved, and its adoption as a part of their rules and regulations by the various state regulatory commissions.

That there exists a need for uniformity in the regulations of the various utility commissions affecting the physical characteristics of the motor coaches operating under their jurisdiction, no one can deny. Rules and regulations of these commissions, placing restrictions upon or requiring certain features in motor coach construction, began to develop soon after the advent of motor coach transportation in this country. They had as their purpose the protection of the public from various dangers, and the guarantee to the public of certain comfort features to which the public was entitled in return for fares paid. These rules and regulations placed restrictions upon the length, width and height of motor coaches, the size, color and location of lights, the size, location and mechanical operation of emergency doors, and so on.

Unfortunately, however, not all of the state regulatory commissions were in agreement as to the exact nature of the regulations which should be enforced, so that numerous conflicts and irregularities arose which have created many difficulties in motor coach operation and manufacture. As a result, motor coaches constructed and equipped in a manner to meet the regulations of one state in full may not be operated legally in another state, where the regulations covering construction and equipment are different. This has naturally had the effect of restricting the operation of motor coaches across certain state lines, and has rendered operation of many motor

coach systems rather difficult and expensive. Likewise, the nature of the regulations existing in many of the states has had the effect of restricting to a greater or less degree progress in the design and manufacture of new motor coaches better fitted than those constructed in the past to meet existing needs.

It will readily be seen that this situation has created a condition which is highly inimical to the full development of motor coach transportation in this country. In some respects, the situation is that which existed when there was no standard railroad track gage. Railroad transportation could no more have developed without the adoption of a standard gage than motor coach transportation can develop without some standardization in the rules and regulations affecting the construction and equipment of motor coaches. So much for the need of uniformity.

Although there may be certain features in the revised specifications code which will not have the hearty approval of all concerned, it is expected that general endorsement will be given to it. It provides for a minimum of restriction and specifies results which must be obtained rather than exact means by which they should be secured.

Some of the outstanding features of the revised code are as follows: A maximum over-all length of 40 ft., a maximum over-all width of 96 in., and a maximum unloaded over-all height of 14 ft. 6 in. Originally, the intention was to provide for a maximum over-all length of 33 ft., in accordance with the Hoover code, but this was increased in anticipation of developments in motor coach construction and in improved road building. Body dimensions, except with respect to minimum headroom, were dropped during the revision meeting from the original specifications code. Another interesting rule in the revised code provides for emergency doors. The location and dimension of the emergency door are matters upon which there have always been great disagreement. As to the location of such doors, the revised code provides only that "it must be located at or near the rear of the bus body."

The revised code deserves the closest study of all concerned with motor coach operation. In its present form the code seems to provide sufficient regulation to protect the public, yet not so much as to place burdens and restrictions upon improvements in motor coach design, manufacture and operation. Items in the code might be singled out for disapproval by individual interests, but such are inevitable. Then, too, the present revised code may look out-of-date two years from now, so that further revision may be necessary, just as the code drawn up two years ago had to be revised in the light of later



developments at the Washington meeting. But the purpose of the code is a good one, and like its purpose, the code is deserving of support.

The Motor Transport Division of the American Railway Association has never taken official action by way of endorsement or disapproval of the code, although it has been submitted informally to the division. As the sole representatives of the railways, which are fast becoming the largest operators of motor coaches, the division will be expected to take some action regarding the code.

The division was represented at Washington by an unofficial observer. It is to be hoped that the division will take as strong action in support of the specifications code as its own rules will permit. Unanimous support of the code will be necessary if it is to become, as planned, a part of the rules and regulations of the various state regulatory commissions.

## What Is So Mysterious About Motor Transport?

**"I** WONDER what it is about motor coach transportation that is so mysterious that only an automotive man of long experience is supposed to know anything about it"—this query was made by a man who has spent his entire career at railroading, but who now heads a successful and growing railroad highway subsidiary. His curiosity was largely rhetorical, however, since its answer is obvious. There is nothing about motor coach transportation so mysterious that railroad men cannot easily master it. Indeed it may be said that motor coach transportation is probably nine-tenths transportation and only one-tenth motor coach. Railroad men, in entering highway transportation, thus are already equipped with the major part of the experience they will require and the remainder is not difficult to secure.

As a matter of fact, there is more than one instance of a railroad organization coming newly into the field of motor transport and rapidly surpassing independent operators of years of experience in the quality of service, in safety and in public approval and patronage. The reason is not far to seek—the railroad is not a new comer, but rather a veteran, in transportation, whereas the independent operation is quite frequently manned by men of only a few years' experience in transportation work who are learning by the painful trial and error method the fundamentals which railroad men have had ingrained into them for decades.

The business of discipline and training of employees, of working out operating practices to a routine which is reasonable and which can be easily understood and followed, the technique of dealing with emergencies—all these are the really difficult aspects of transportation science in which every railroad officer has had years of training, compared to which the experience of a veteran even in highway transportation is slight by contrast. Automotive vehicles are not similar to locomotives and motor transport has its peculiar problems, it is true, but they are not difficult for railroad men to master. The outstanding success which railroad men have already made within the space of a few years—or even months—in operating motor transport lines shows conclusively that there is nothing mysterious about the technique of the business which need act as a deterrent to entering it.

## Save Money Through Spending Money for Shop Equipment

**I**NVESTMENTS in various kinds of shop equipment probably pay quicker returns to motor coach operators than any other kind of expenditures. Expenses for maintenance inevitably are a substantial part of motor coach operating costs, but they are susceptible to substantial reduction through the inauguration of better maintenance methods, and even more, through the installation of tools and other shop equipment which will enable maintenance work to be carried on more efficiently.

Some arresting statements as to savings made possible by the modern equipment installed in the garage of the Oregon Stages, Inc., at Portland, Ore., are made by R. W. Lemen, president and general manager of the company, in an article entitled "Complete Shop Equipment Keeps Maintenance Costs Low", which is published in this issue. One instance of substantial savings in maintenance costs through the use of proper equipment in the garage—one of the many cited by Mr. Lemen—involves a plate-glass grinder. Mr. Lemen estimates that this machine, valued at \$200, has saved his company several thousand dollars, enabling a plate-glass window to be replaced at a cost of approximately \$5, including charges for glass, labor and polishing, instead of at the cost of \$12.50 for many such jobs prior to the purchase of the grinder.

Complete shop equipment pays good returns on the investment in it not only because it reduces labor and other costs incident to maintenance operations but more important, because it enables necessary jobs to be done quickly, so that the tie-up of rolling stock is kept at a minimum. As Mr. Lemen states, this is the greatest economy possible in motor coach maintenance. Motor coach operators can save money by spending it for proper shop equipment.

## Boston & Maine Motor Truck Operations

**A**NNOUNCEMENT is made in the news pages of this issue of the recent expansion by the Boston & Maine Transportation Company of the already extensive l.c.l. freight trucking service which it performs for the account of its parent railroad, the Boston & Maine. The extent of these activities centering about 10 concentration points was pointed out in an article published in the *Motor Transport Section* of September 22, 1928, page 580. Now comes the further expansion at several Massachusetts points. It involves, in addition to movements to and from concentration points and short haul station-to-station runs, a trucking service in lieu of ferry car operation.

This latter has been installed to the largest extent at Holyoke, Mass., where, the announcement points out, industrial switching costs had been the highest on the entire B. & M. system. The substitution of trucks therefore is expected to bring substantial money savings over former ferry car operating costs and, in addition, it is anticipated that a time saving of 24 hours on both inbound and outbound freight will result.

Many railways which have entered the motor coach field have perhaps not yet considered seriously the possibilities for savings in trucking of local l.c.l. freight.

These possibilities, however, are becoming more and more recognized. The Boston & Maine, the first railroad to operate motor coaches, has also been a pioneer in freight trucking and from it has gleaned substantial savings in both operating costs and time of freight in transit. This latter, according to B. & M. officers, has tended to attract back to the railroad, traffic previously lost to independent highway operators.

It would seem therefore, that in view of this successful experience of the B. & M., other railways might well find its activities along this line worthy of close attention.

## The Motor Truck—a Helper or a Competitor of the Railways?

**W**HETHER the motor truck, as a means of transportation of commodities, has done and is doing the railways more good than harm, is one of those questions which will probably never be decided to the complete satisfaction of everyone. A. J. Brosseau, president of Mack Trucks, Inc., and vice-president of the National Automobile Chamber of Commerce, recently addressed the National Industrial Conference Board and the Eastern Railroad Executives' Association on this subject, and presented a strong case for the motor truck

as a helper rather than a competitor of the railways. Portions of Mr. Brosseau's address are published in this issue of the *Motor Transport Section*.

When the Motor truck first came upon the transportation scene, it was condemned by most railway men as a direct competitor of the railways for freight traffic. But a change of attitude has taken place, so that the motor truck, along with the motor coach, is no longer considered solely a liability so far as the railways are concerned.

Mr. Brosseau's premise is expressed in this way: "The motor truck is not a competitor of the railroad. It does not take any business from the railroad that is profitable to the railroad. Nearly all of the merchandise transported by truck upon the highways is what is known as l. c. l., and is transported in the relatively short distance zones. The truck furnishes an entirely different type of transportation from that of the railroad, and the railroad is not equipped to render such service." Exceptions to these statements may be cited; they may prove the rule, or disprove it.

But more important than the settlement of the question of whether or not the motor truck is a competitor of the railways, taking profitable traffic from them, is the recognition that the motor truck does offer opportunities for useful service when employed by the railways. In the long run, transportation efficiency will be brought to a peak when the competitive aspects of the various forms of transportation are forgotten, and attention is centered upon making them work together.

# Communications

## A Distinctive Horn for Railway Motor Coaches

GREENFIELD, MASS.

TO THE EDITOR:

Here is a suggestion, which, it seems to me from my personal observation and viewpoint, would not only benefit our own operation, but also that of any railroad or subsidiary company now engaged in motor coach operation.

While it may be true that some of our western and southern highways are amply wide and that in some localities there are no hills or mountains, it is also true that some of our New England highways are less than 16 ft. wide and lie through mountain trails. Such famous scenic trails as the Mohawk, Daniel Webster Highway, Jacob's Ladder, Taconic and Berkshire Trails are, in spots, very narrow with many curves.

The suggestion which I have in mind is for the horn manufacturers to provide a distinctive horn signal to be used exclusively on motor coaches operated by railroads or their subsidiary companies, thereby providing a warning signal which would be so different from that of the various horns now on motor coaches and private automobiles, that in due time automobile drivers would realize this signal meant the approach of a large coach heavily loaded with passengers. In some cases this might avoid possible "ditching" of the coach, with consequent injuries to passengers and equipment. The horn signal given at present does not mean any more than that an ordinary automobile is desirous of passing, with the result that the driver ahead does not give any more highway room than he feels is necessary. In my opinion, if the attention of the driver were called by a peculiar or distinctive sound, he would be likely to pay more attention.

This suggestion does not in any way infer that motor coaches are speeding on the highways; but if it is carried out, it will avoid many close calls, thereby making motor coach transportation the safe mode of travel that we are aiming to make it.

Of course, the important point is, when such a distinctive

horn signal is brought out, to convince the horn manufacturers that it should be sold for and applied on only railroad-operated motor coaches.

M. C. MOREL,  
Superintendent, Greenfield Division,  
B. & M. Transportation Company.

## The Uniform Specifications Code

LONG ISLAND CITY, N. Y.

TO THE EDITOR:

I trust that there will be found in the record of the revision meeting of the Uniform Motor Bus Specifications Code, evidence that it should be endorsed by interested organizations, and particularly the railroads, which in time are bound to be big interstate operators or interested in such operations.

The Code was developed to be promoted among the state public utility authorities so that such safety regulations as are covered by the Code may be uniform between the states. This condition does not now exist. As a result, interstate buses are frequently in conflict with the regulations at least in one state, and rigid enforcement of the existing regulations would necessitate a change of equipment at each state line, a very costly method of operation, analogous to the old variation in railway track gages.

The Uniform Code's objective is to provide the safety for which such regulations have been created, in a manner that will be uniform throughout the land.

The object of the Code and its provisions are so logically sound from the standpoint of both operation and manufacture that it is my sincere hope that you will find in it ample evidence to justify its promotion in your paper and your recommendations for its endorsement by the organizations and its adoption by public utility authorities.

DOW W. PERKINS,  
Secretary to the Formulating Committee,  
Uniform Motor Bus Specifications Code.



## Complete Shop Equipment.

# Keeps Motor Coach

*Quick return on investment in machines and tools is secured  
by Oregon Stages, Southern Pacific subsidiary*

**S**OME four years ago, the Oregon Stages had only 18 cars to take care of in a small rented garage equipped with a few crescent wrenches, two bench vises and a couple of grease guns. Since that time, through incorporation, consolidations and mergers, our equipment has increased greatly; and for its servicing and maintenance, a corresponding growth has taken place in our shop system. Today we have a modern up-to-date department maintaining, servicing and rebuilding some 110 cars, housed in fireproof concrete buildings, with a personnel of 74 men.

Portland, Ore., is the headquarters, and all major work is done here. We have in addition a well equipped garage at Salem employing 18 men, and service garages in Corvallis, Eugene, Marshfield and Medford, employing from 5 to 7 men each. These plants are manned by a trained force, who have been brought up with our operation and development and are well qualified and properly equipped to handle any kind of job that the business demands.

### Shop Equipment Complete

To do this, adequate facilities are essential, and our Portland maintenance and manufacturing plant has the following equipment with which we can build complete motor coach bodies, take care of any motor coach body repairs, completely overhaul and maintain any of the 110 motors and in addition do all our own electrical, battery, differential and transmission rebuilding.

We have in our body-building department, in addition to many other items, the following: A complete band-saw outfit, including jointer, planer, cut-off saw, rip saw, mortice machine, etc., valued at \$2,000, all in charge of a competent coach builder; one metal-break machine and one metal shear, valued at \$175 each,

which are used to bend and cut sheet metal panels, channels, grooves, etc., in the renovation or rebuilding of coach bodies. With these are several sizes of electrical speed drills, valued at from \$22 to \$85 each, which are adaptable for use in wood or metal in sizes from  $\frac{1}{8}$  in. up.

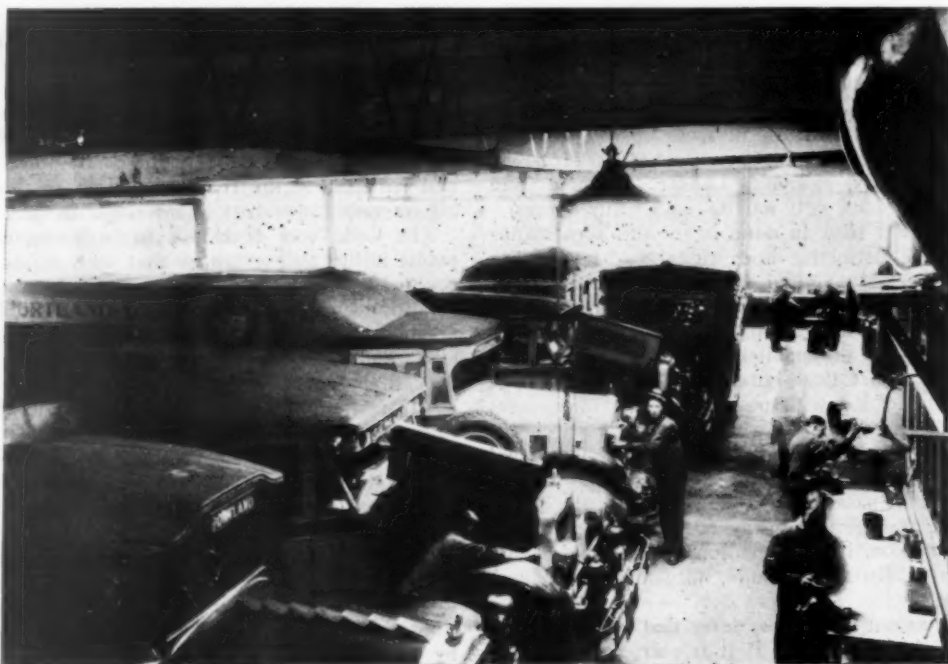
A welding machine, valued at \$100, is used for various purposes, such as cutting and welding frames, cowls, aluminum, etc., and is able to take care of any and all jobs of this sort that come along.

A plate glass grinder, valued at \$200, has saved us probably several thousands of dollars. Two years ago, to replace a plate glass window cost as high as \$12.50. With this equipment, it costs approximately \$5, including glass, labor and polishing. In any kind of a wreck, the glass is about the first thing to go, and jobs of a major nature cost anywhere from \$20 to \$150. Even this would probably allow for only a cheap grade of vitro glass. We are now able to go into the competitive market and secure the very finest plate glass, a real essential in the case of doors and windshields. We are able to do our own fitting, cutting, polishing, beveling, all at half the cost, at our own convenience and with a minimum tie-up of cars.

### Big Returns from Tool Investment

A fender machine, valued at \$15, is one of our most useful and economical implements. It is used for rolling out bent fenders and forming new fenders. These

are some of the tenderest parts of a car, and are always in trouble; yet a visible defect on a fender mars the lines of the best coach. Formerly we had to pay \$7 to \$10 for a fender, but now, with material costing \$1.50, one man can make a new fender in one and one-half hours at 90 cents per hour for labor, and with a minimum tie-up of cars



General View of Repair Shop

# ch Maintenance Costs Low

By R. W. Lemen

President and General Manager, Oregon Stages, Inc.

—which, after all, is the greatest element of economy.

A portable grinder, valued at \$125, is an all-around useful machine. It consists of an emery wheel on a flexible shaft, and it will tackle any job, such as grinding fenders after welding. With a felt or rag replacement, it may be used to polish painted or lacquered bodies of cars, a job which used to take two men six hours but which can be done now by one man in half the time.

Two spray guns which cost \$40 each are used for lacquering and painting—a process which saves a week in tie-up. Formerly a motor coach which was being repainted was tied up two weeks, and even then the job would not stand up more than a year. Finished by the new process of lacquering, we have coaches which have been in service nearly three years and have operated over 250,000 miles, yet the paint is still in very fair shape.

## Motor Repair Equipment

In our motor repair department, we have gradually accumulated some very fine equipment. We have mechanics whose personally owned tools are valued at not less than \$100 or \$200 per man, and all of these tools are fitted for our own particular type of work. This is an item which I may point out as counting more than any other single factor in helping to instill pride of accomplishment in a shop crew, and thus to produce a better grade of maintenance work at a lower job cost.

A partial list of our repair and maintenance equipment includes the following: One large turning lathe, valued at \$1,500. This is an integral item of any well appointed machine shop. It has a gap bed which permits its being used on any kind of work, from the making of the smallest kind of bushing to refacing our largest type of

brake drum. A drill press of modern type is another important item, and is valued at \$150.

A valve refacing machine of the most modern design, valued at \$200, is an implement of such use that its saving to us can scarcely be over-estimated. Valve trouble is universal. The value of this implement is in its capacity to make the valve seat perfect. It enables us to keep our division shops, such as those at Salem and Eugene, supplied with valves to fit our various units to replace old ones which are being sent in to be refaced. The great saving is in the minimum tie-up and the better and surer performance, for the turning lathe does not do a perfect job. The use of this machine has remedied a minor mechanical trouble which was a source of much car delay and attendant annoyance to our passengers.

## "Home-Made" Machines Useful

A generator starter and coil testing machine, valued at \$65, was made in our own shops by our own men and was built for our particular requirements. It answers the purpose of a machine usually costing \$400. With this machine we can test generators, set the charging rate, etc. In testing coils which the average machinist would usually throw away through lack of proper testing facilities, on the common theory that any minor trouble makes necessary a new coil, we are able to have the old coils sent into the shop for repairs and we thereby effect a saving amounting to \$5.90 per coil.

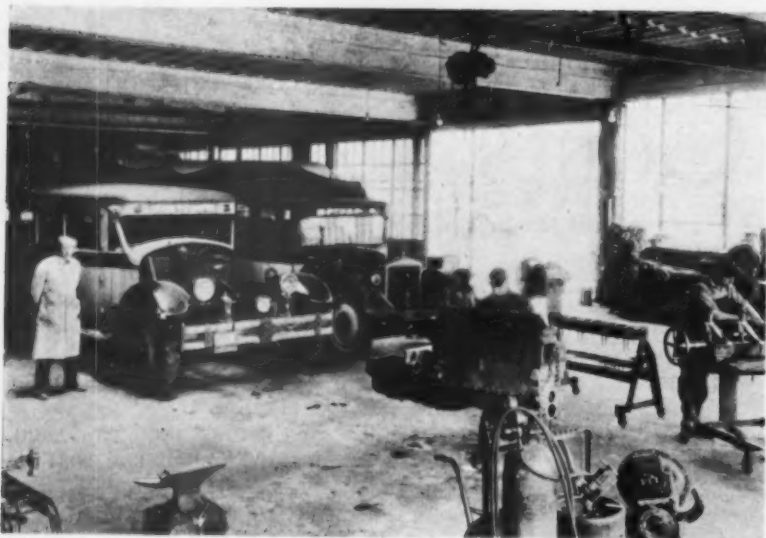
This machine is kept in constant use.

We also have on this machine an attachment which we originated and which is used for testing and adjusting speedometers. Its results are eminently satisfactory. No car leaves the shop without a properly working speedometer, as required by law, and there are no tie-ups on



Section of Storage Garage

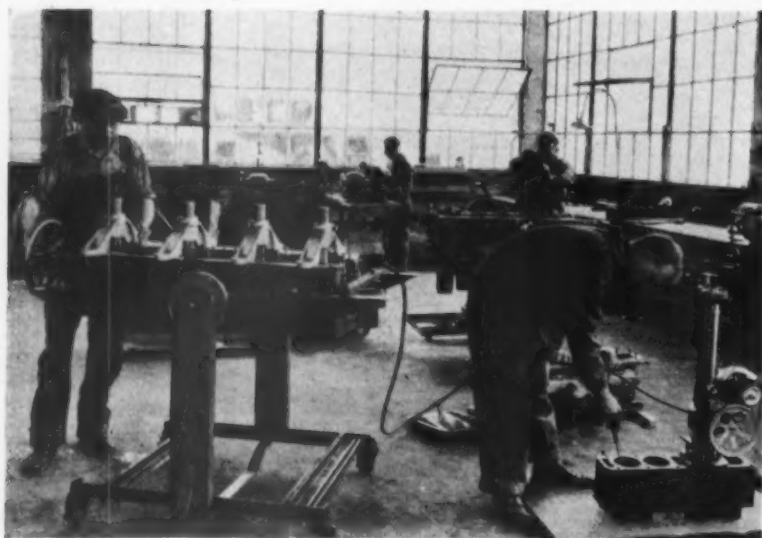
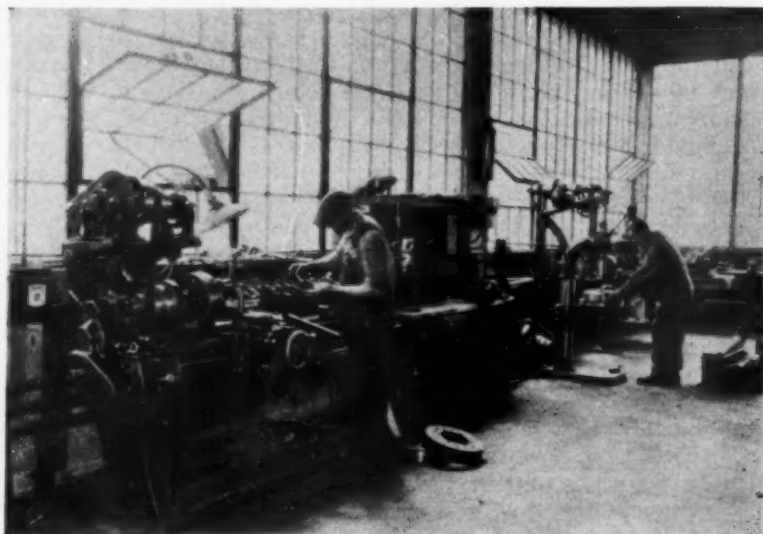




Above—A Corner of the Repair Shop

Right—Machinist Trueing Up Crankshaft on Turning Lathe. Drill Press at Right

Below—Line Boring Machine (at left), Motor Stand (in right background), and Cylinder Boring Machine (at right)



this account because this machine can be used by anyone in the shop, day or night, seven days a week. Excluding consideration of the expensive delay in tie-up, a job of this kind when sent out, used to cost as high as \$25 and it was a frequent occurrence.

Two motor stands, valued at \$85 each, enable one mechanic to handle any motor alone. The stand is de-

signed so that the motor can be made to revolve and is adjustable at any angle or in any position the mechanic may need, until the motor is thoroughly overhauled. One of these is also the product of our own shop men.

A line-boring machine was made by us for about \$100. This machine can line out main bearings perfectly. It is especially made for particularly heavy work and turns out better jobs than the machines costing \$450 or \$500, such as those used in outside garages, which are equipped for use on cars of all sizes but which do not give as good results on our work as our own machine. This enables one of our mechanics, at 90 cents an hour, to set up and line bore a set of main bearings in 3½ hours—a job that, if sent out, would probably cost \$24 and would probably take two days.

A cylinder boring machine, valued at \$135, is a time and money saver. With an automatic

stop, it can be fastened on the block and spaced. The machine will go ahead and do the work without attention, leaving the mechanic free to go ahead with other work. This machine saves us \$1.75 a bore, or \$18 for each block re-bored, and it is adaptable to some 50 of our units. Coupled with this we have several cylinder grinders, valued at \$25 each, which are used to polish cylinder walls after boring, insuring a finished and perfect job.

An emery wheel, valued at \$120, is an essential, and has many and varied uses in our shop.

A 30-ton press, valued at \$90, is a useful heavy-duty adjunct to our shop and, as its name indicates, it does no small share of the work after a wreck or mishap in such man-sized jobs as straightening axles. It will also press off bearing cones, and cold rivet ring gears for differentials and gear assemblies for transmissions—jobs which will not “stay put” with the hot riveting process. This machine has paid for itself many times over in work and time-

saving on heavy jobs incident to accidents.

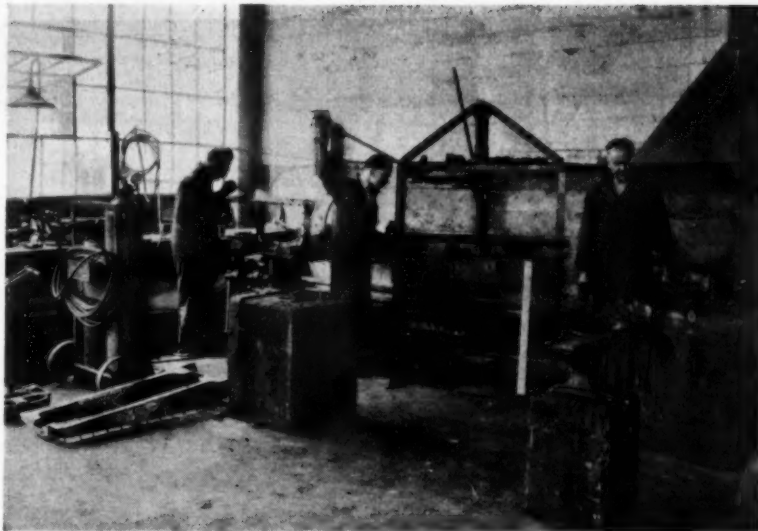
A complete blacksmith forge, with all accessories and an electric blower, is also a product of the ingenuity of our shop force, and is valued at \$60. In addition to its regular use in numerous repair jobs, we also use it in conjunction with our body building in making our own material such as arms, braces, brackets, etc.

A most necessary machine is a crank refacing tool, valued at \$75, which refaces cranks of our various units.

A complete set of micrometers, costing from \$7 to \$18 each, are constantly in use and play their important role in enabling accuracy of measurement on cylinder bores, pistons, main bearings, etc.

A complete battery building department enables us to do our own service at a saving in money of 30 to 50 per cent and a saving of idle time on our units, which can now be sent out day or night, battery perfect. The outfit, valued at \$200, consists of battery charger jar, torches for the necessary welding and sealing, cell pullers, plate holders, etc.

Six portable hydraulic jacks, valued at \$90 each, and capable of lifting any of our units from 3 in. to 18 in., play an important part in our various departments in facilitating work.



Above—One Corner of Shop Showing Welding Outfit, Press and Forge



Left—Body Building Department. Left to Right, Metal Break, Metal Shear, Glass Grinding and Polishing Machine, and Woodworking Machine, a Combination of Six Woodworking Units.

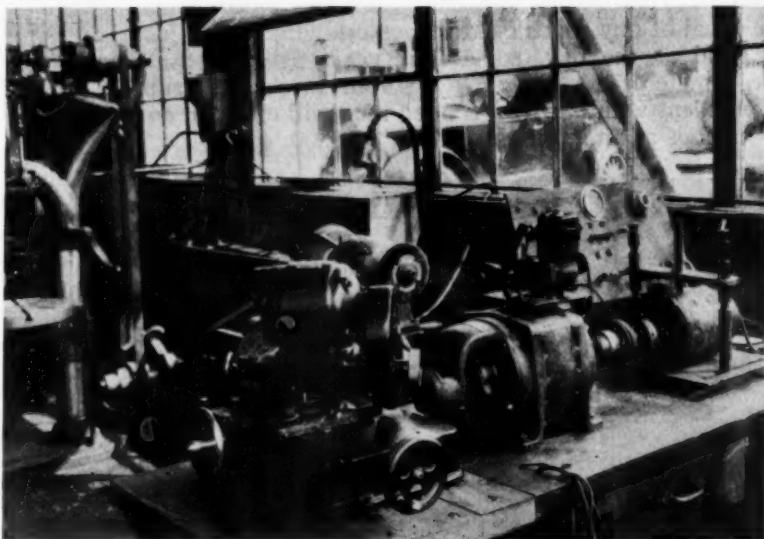
Below—The Valve Refacer, the Speedometer Tester and the Test Bench for Electrical Units

A small oil reclaimer is working full capacity 16 hours a day, and with good results. We have not determined the monetary saving of this device, but the results are satisfactory and an estimated saving of at least 25 per cent of the oil cost would be a fair approximation of the net economy.

In several of our garages we maintain a light testing station to meet state requirements, and at each garage, one of our own men holds a state certificate permitting him to make required adjustments. This is an added safety factor.

#### Small Tools Carefully Kept

In addition to the above, a quantity of small parts is kept in store by a competent staff, and as in every well ordered shop, is kept in modern receptacles, indexed, numbered and in an orderly manner. Besides the personal tools of the mechanics previously referred to, we have an adequate supply of tools such as drills, automatic and electrical, cone rod reamers, etc., all essential to a modern shop. These are kept under the care of a storekeeper and are checked out by him to whatever mechanic may need one of them. In the tool's accustomed place, the mechanic's brass check is hung—a measure devised to place responsibility and to enable knowledge of the location of any tool at a glance.



A trimming department is maintained as an accessory to the body building department, and is equipped with material, a sewing machine and such paraphernalia incident to the replacement or repair of inside furnishings of cars, panels, seat cushions, etc.

All these items have been acquired with growth and expansion as occasion required, since the pioneer days





Another View of the Woodworking Department

of the wrench and grease gun, when all repairs were sent out. There is now no job too big or difficult for the shop force of the Oregon Stages to handle with its own personnel and equipment.

In our body building department, on the day this is written, we have our car No. 1 on the blocks. No. 1 is a six-cylinder Fageol. Its motor is in the repair shop and is being completely overhauled; its electrical, ignition and battery system is in the hands of another department; the wheels are in another. Its steel body panels are removed, and it stands with its bare ribs exposed. Our expert body builder is engaged in replacing here and there integral parts of its oaken frame work.

#### Coach Overhauled at \$500

No. 1 has given us wonderful service in the last three or four years, during which it has traveled some 350,000 miles. Within a few days No. 1 will be back in service, bright and shiny, in perfect mechanical condition, with clean and comfortable upholstery and easy riding seats, the equal of any coach on the Pacific Highway and just as good as the day, some four years ago, when its speedometer read "0." All this, our mechanical superintendent with our own trained men will effect in our own shops at an approximate cost of \$500.



Painters at Work With Spray Gun and Polishing Machine

## Trailers and Semi-Trailers

By Fred B. Lautzenheiser

**M**UCH has been written about making the truck and its equipment fit the job for which it is intended. Capacity, gear ratio, load distribution tires, body equipment, etc., must be carefully determined if the truck is to meet exactly the requirements. These specifications must be based on the nature of the material to be hauled, the length of the haul, the type and condition of roads, and the grades involved.

Of equal importance, preliminary to the use of trailers, is a careful analysis of each phase of the proposed operation. Possibly tractor-trucks and semi-trailers will be the answer. For other purposes trains consisting of a tractor-truck, a semi-trailer and one or more four-wheel trailers, may serve best. To meet other conditions or requirements, longer wheelbase trucks with bodies, and pulling one, two, or three four-wheel trailers, might be the solution.

Four-wheel trailers carry their loads equally distributed on front and rear axles; therefore, front and rear tires can be the same size. Semi-trailers, however, present a different problem in load distribution, as a greater portion of the trailer weight and its payload is generally carried on the trailer wheels at the rear than on the fifth wheel mounted over the truck rear axle. Load distribution of semi-trailers is calculated in practically the same manner as that of a truck.

It is highly desirable to equalize the tire loads between trucks and trailers, especially when pneumatic tires are used, so that the same size tire can be used interchangeably throughout. This will generally mean single fronts and dual rears on the truck or tractor with duals on the semi-trailer and duals both front and rear on the four-wheel trailers. It is usually a mistake to equip the truck with pneumatics and the trailer with solids, or vice versa, as the speed of the train is limited to approximately 20 miles per hour by the solid tires in the train.

Legislation in the various states seems to be gradually driving the solid tire from the highways and this appears to be more or less justifiable, except in special cases, not only from the standpoint of highway conservation, but from that of the truck owner's cost sheets as well.

More and more each year, state legislation is making trailer use imperative by the restrictions placed upon total weights on individual axles. At the same time some states are placing maximum dimensions on over-all train lengths, which, in conjunction with the limited axle weights, makes interstate hauling a difficult problem.

The old saying that a horse can pull much more than he can carry also holds true with a motor truck. By "rule of thumb" a motor truck can carry its capacity load and pull in addition, on trailers, twice its rated capacity load. Thus a one-ton truck can transport three tons, or a three-ton truck can transport nine tons. Also by "rule of thumb," one-half the rated capacity of a truck in pounds represents its approximate tractive effort or drawbar pull. But "rule of thumb" does not

consider the wide range of change in drawbar pull made possible by change of axle ratio or tire size, or by the fact that one truck may be powered by a thirty-five horsepower engine while another of the same rated capacity is powered by a sixty horse power engine.

#### Determining Draw-Bar Pull

The only exact method of determining the true drawbar pull is by actual test, using a traction dynamometer. This consists of a specially built two or four-wheel trailer provided with brakes and instruments for accurate determination of the pull exerted by the truck in moving the dynamometer.

The most accurate method of calculating tractive effort is based on the actual torque developed by the engine, taken from the power curve on the engine test sheet. However, the necessary factors are not always available. For purposes of comparison of one truck with another, or for estimation of the pulling ability of a truck in the absence of engine power curves, a formula is used which is based on the engine's piston displacement. The great advantage of the latter method of calculating tractive effort lies in the fact that the factors involved are always available for any truck.

In determining the total train weight that can be pulled by the truck, these calculations should be based on the direct transmission speed as that is the speed in which 95 per cent of the work is done on the highway. Consideration must be given to the various transmission speeds for the hard pulls through soft roads and up hills.

#### Tractive Effort Required

Tractive resistance, or the tractive effort required, must also be considered: 30 lb. for each ton of train

weight, for level macadam; 50 lb. for level gravel, and 100 lb. on sand or dirt road, may be considered the tractive resistance due to the type of road. For each per cent of grade encountered, 20 lb. per ton of train weight should be added to the road resistance given. These figures will provide a good margin of safety.

One recent transportation problem was analyzed as follows: An operator in the South desired to equip for hauling 100 bales of cotton each trip, to a centralized point, over routes approximately 100 miles in length and radiating into three different states. Examination of the state laws disclosed restrictions in weight to 15,000 lb. per axle in one state and of 65 ft. total train length in another. It was found that 80 bales was the maximum that could be hauled. These would be loaded 24 bales on a platform body on the truck (185-in. wheelbase) end to end at the center, two tiers deep, and 28 bales on platform bodies on each of two 16-foot-four-wheel trailers, also end to end and two tiers deep.

By the above distribution the maximum load on any axle did not exceed the limit and the total overall train length was held to 63 feet.

The tractive effort calculation showed the truck capable of hauling the total loaded train weight, 31 tons, in high gear on the approved roads specified, when equipped with 36 in. x 5 in. solid front and 36 in. x 10 in. solid rear tires and 9.95 to 1 rear axle ratio. The suggested tire equipment for the trailers was 36 in. x 8 in. solids on all four wheels.

Alternate tire equipment, 40 in. x 8 in. pneumatic singles on front of the truck with 40 in. x 8 in. pneumatic duals on rear, and duals on both front and rear of trailers, would reduce the pulling ability somewhat but would increase the maximum road speed to 21½ miles per hour.

## Uniform Specifications Code Revised

*Meeting at Washington brings several important changes and eliminations in proposal of formulating committee*

REPRESENTATIVES of organizations interested in motor coach operation, design, manufacture and regulation met in conference at Washington on June 20 and 21 for the purpose of discussing the Uniform Motor Bus Specifications Code which had been tentatively drawn up by their formulating committee. The Washington conference made several important revisions and eliminations in the specifications placed before it by the committee. The resultant code, adopted for recommendation to the states, is therefore much less comprehensive and less specific in its provisions than was the set of specifications which formed the basis of the discussion.

The Washington meeting was attended by representatives of the Motor Transport Division, American Railway Association; the Motor Vehicle Conference Committee; the National Automobile Association; the National Bus Division, American Automobile Association; the Society of Automotive Engineers; the American Electric Railway Association and the Bureau of Public Roads, Canadian Interprovincial Conference. The New Jersey Board of Public Utility Commissioners

sent an unofficial observer to the conference. The Motor Transport Division, A. R. A., was represented by R. J. Littlefield, manager of motor coach service, Boston & Maine Transportation Company.

The first day was consumed mainly in general discussions and it was not until late in the afternoon that the rules of the code came up for consideration. The second and final day thus opened with most of the proposed provisions still to be acted upon. This session moved swiftly with acceptance, elimination or revision of the rule under review being decided upon in the main with little discussion.

The lengthy discussions of the first day centered around the advisability of promulgating any code at all, and with promulgation decided upon, the arguments turned to the form which the code should take—whether legal and thus suitable, itself, for adoption by legislatures or a memorandum of suggestions to be incorporated into state laws. The former was decided upon.

The types of vehicles to be included, the wording of Rule 1—Approval for Operation and the rules relating



to maximum dimensions and minimum head room precipitated most of the remaining discussion.

Because of the great number of changes and eliminations, both the code proposed by the committee for consideration and the final specifications evolved at the Conference are set forth below. The provisions of the proposed code are set in light face type and include a digest of the formulating committee's discussion of each item. *Provisions of the revised code are presented in bold face type immediately following the proposals from which the respective rules were adopted. Bold face type notations are also placed under items which appeared in the committee's proposals but not in the revised code.*

#### RULE 1.—APPROVAL FOR OPERATION

Every bus regularly operated in any service under authority of this commission must conform to the specifications established by the commission as herein set forth.

##### LENGTH

*Recommendation:* No bus shall be operated which shall exceed a maximum overall length of thirty-three (33) feet.

*Discussion:* It has been found that the overall size of a vehicle when the maximum limits set for all vehicles has no bearing upon the comfort, conveniences and safety of passengers; that the dimensions are imposed purely as highway expedients and therefore bear no fundamental relation to the problems that concern a public authority regulating to alleviate possible impositions upon the riding public. The same underlying principle applies against the establishment of any minimum overall dimension. Fortunately, we find none of the latter in present state regulations.

It is believed advisable, however, to include maximum dimensions in the Uniform Bus Specifications Code as a precautionary measure. In deciding upon these limits it has been deemed advisable to promote in fact as well as spirit the desirability of uniformity; they are therefore the limits set after careful and exhaustive study and set forth in parts (a), (b) and (c) Section 37 of the Act Regulating the Operation of Vehicles on Highways, a part of the Uniform Vehicle code. The reference will be found on page 81 of the published code.

#### RULE 2.—MAXIMUM LENGTH OF BUSES

Buses to be approved for operation must not exceed a maximum overall length of 40 ft. The commission, however, reserves the right to further restrict the maximum overall length over particular routes.

##### WIDTH

*Recommendation:* No bus shall be approved which exceeds a maximum overall width of ninety-six (96) inches.

#### RULE 3.—MAXIMUM WIDTH OF BUSES

Buses to be approved for operation must not exceed a maximum overall width of 96 in. The commission, however, reserves the right to increase the maximum overall width over particular routes.

##### HEIGHT

*Recommendation:* No bus shall be approved which exceeds a maximum overall height of fourteen (14) feet six (6) inches.

*Discussion:* Physical factors may determine a height limitation independent of regulation.

#### RULE 4.—MAXIMUM HEIGHT OF BUSES

Buses to be approved for operation must not exceed a maximum unloaded overall height of 14 ft. 6 in.

##### LENGTH

*Recommendation:* No regulation shall be imposed which shall in any way limit or restrict the length of a bus body as a unit separate from the chassis.

*Discussion:* Any dimension of a bus body which does not interfere with the comfort, convenience or safety of passengers, belongs in the same category as overall vehicle dimensions and is therefore outside the scope of advisable public utility regulation. Furthermore, lengths and widths of bus bodies are integrally dependent upon chassis design and cannot be set arbitrarily for the body as a unit independent of the chassis. Any such regulation pre-supposes fixed body capacities and invariable types of services which are quite obviously impossibilities.

(Not included in revised code)

##### WIDTH

*Recommendation:* No regulation shall be imposed which shall in any way limit or restrict the width of a bus body as a unit separate from the chassis.

*Discussion:* See that under LENGTH.

(Not included in revised code)

##### HEADROOM

*Recommendation:* No bus shall be approved which shall have a headroom less than the following:

City Type Buses .....	76" minimum
Parlor Car Buses .....	60" minimum
Observation Parlor Car Buses .....	60" minimum
Sedan Type Buses .....	56" minimum
Double Deck Buses:	
Lower Deck .....	76" minimum
Upper Deck .....	60" minimum

*Discussion:* It has been deemed advisable as a cautionary measure to specify the minimum headroom dimension which will insure reasonable comfort to passengers. The dimension for city type buses is determined by a weighted average of passenger heights as they are designed to carry standees; the upper deck of double decked buses not being assumed for carrying standees can be permitted a lower minimum. Those set for parlor cars and sedans are selected as the minimum dimensions which will permit a comfortable entrance and exit for buses that are designed to carry seated passengers only. As the tendency is toward lower vehicles there is no occasion for the establishment of a maximum specification on this item.

#### RULE 5.—MINIMUM HEADROOM

Buses to be approved for operation must have a headroom clearance between the floor and head lining of not less than the following minimum dimensions:

- Along the center line of the longitudinal aisle where standees are regularly carried of 74 in.
- Along the center line of the longitudinal aisle where standees are not regularly carried of 60 in.
- Where there is no longitudinal aisle, as in the full cross seat type of body, headroom measured along the center line of the body to be 54 in.

##### BEYOND REAR AXLE

*Recommendation:* The portion of the vehicle at the frame level overhanging the center of the rear axle shall not exceed 7/24ths of the total vehicle length.

*Discussion:* The body may be extended beyond the rear axle to such a distance that the sweep of the extension in traffic may result in collisions. It is therefore deemed advisable to create a limitation which will tend to prevent such possibilities.

Scotland Yard of Great Britain, which is the oldest public authority regulating buses, specifies that the overhang shall not exceed 7/24ths of the total vehicle length. Upon analysis this proportion seems to have been very carefully determined as an adequate safeguard in the most congested traffic. Furthermore, it is a regulation which will be acceptable to standard American practices.

(Not included in revised code)

##### BEYOND THE FRAME

*Recommendation:* No bus shall be operated which shall have the body at the frame level extending more than ten (10) inches beyond the chassis frame.

*Discussion:* Regulations governing bus body overhang beyond the frame were imposed as a protection against make-shift combinations of bodies and truck chassis. It is not believed that any regulation is necessary in view of modern coach development, but since it is, nevertheless, possible to make an unwise extension, the above recommendation is made.

(Not included in revised code)

##### WHEEL HOUSING

*Recommendation:* No regulation shall be imposed purporting to determine definitely the grade or material to be used in wheel housing.

*Discussion:* Any existing regulation on wheel housing material or strength, appears to be a hangover from the early use of vehicles as buses which were not designed for that purpose. Present day standards of manufacture provide reasonable protection against the danger of bursting tires and other contingencies. The supervisory power of commissions can prevent the use of buses having improvised wheel housings. Furthermore, such regulations do not encourage inspection by state officers and are therefore, of no practical value.

(Not included in revised code)

#### VENTILATORS

*Recommendation:* Buses shall be constructed or equipped to afford adequate ventilation.

*Discussion:* It is essential, that buses shall be constructed to afford adequate ventilation. The method by which this result may be accomplished is an exceedingly controversial point. It is therefore believed advisable to follow the basic dictum that regulation should specify a result rather than the method by which it is to be accomplished. Hence the above recommendation.

#### RULE 6.—VENTILATION

Buses to be approved for operation shall be constructed or equipped to afford adequate ventilation.

#### PASSENGER STOP SIGNAL

*Recommendation:* All buses shall be equipped with a suitable passenger stop signal within reasonable convenient reach of each passenger.

*Discussion:* Passenger signals are in most buses essential to the convenience of passengers. There are several methods by which satisfactory signals can be provided, difficulty very seldom being encountered with any of them on the part of passengers. There is therefore, no basis for specifying any more rigid regulation on this item than that recommended.

#### RULE 7.—PASSENGER STOP SIGNALS

Buses to be approved for operation shall be equipped with a passenger stop signal which must be within reasonably convenient reach of each passenger.

#### FOOTBOARDS

*Recommendation:* No regulation should be imposed specifying the character of materials from which footboards must be constructed or how they are to be insulated.

*Discussion:* Present regulations on footboards seem to have been created to remedy an evil resulting from combination truck chassis and passenger bodies. Under present standards these boards are usually of wood or aluminum and the power plant is so designed that there is no chance of igniting the former. Iron floor boards transmit heat to the interior of the body, much to the discomfort of the driver and passengers at certain seasons of the year.

(Not included in revised code)

#### LOCKS AND KEYS

*Recommendation:* No person having control or charge of a motor vehicle shall allow such vehicle to stand on any highway unattended without first effectively setting the brakes thereon and stopping the motor of said vehicle and when standing upon any grade without turning the front wheels of such vehicles to the curb or side of highway.

*Discussion:* Motor buses are not ordinarily left unattended in city service as they are handled as any other public service vehicle. It is occasionally necessary for buses operating on intercity routes to be left temporarily unattended. As every motor bus is equipped with an electric contact switch for cutting off the motor, it is equipped to fulfill the requirements of Section 27 of the Uniform Act Regulating the Operating of Vehicles on Highways, Page 78 of the Uniform Vehicle Code; which appears as the recommendation. This does not appear as a part of the code, it should be included among operating regulations instead of any specification of locks, keys, etc. on bus doors.

(Not included in revised code)

#### WINDOWS

*Recommendation:* It is recommended that no specification should be established to require any form of guard rail or other apparently protective device across window openings to prevent

passengers from extending arms or hands through the windows of the vehicle.

*Discussion:* Windows are, unquestionably the most valuable safety exits in case of accidents. The glass is broken and escapes are frequently effected which would be otherwise impossible. True it would be advisable, if possible to prevent the riding public from sticking arms or hands out of windows. However, the two desirable results cannot be accomplished. It is, therefore, necessary to evaluate the advantages and provide alone for the best. Passengers do have some responsibility for their own safety (courts are recognizing this and defending public utilities against liability for passenger's negligence). Putting hands or arms out of windows of vehicles is gross negligence of personal safety. On the other hand, an accident is held to be the fault of the operating company, and it is therefore reasonable and just that the company should be permitted to utilize and keep free every avenue of escape for their patrons, for that time when serious accident may occur. The option of the operating company should prevail.

(Not included in revised code)

#### OPERATOR'S SIGNAL WINDOW

*Recommendation:* No regulation should be imposed requiring a special window for the driver, presumably designed for hand signalling purposes.

*Discussion:* This item was carefully considered and resulted in the conclusion that it is most desirable in handling motor buses by operators to the greatest protection of riders and surrounding traffic is to see that he keeps his hands on the wheel, particularly when making turns. Any regulation which requires the use of a hand signal introduces a possibility of accident which more than offsets any good advantage of the signal. Furthermore, buses are so constructed that the driver is seated too far from the window to be able to use any facility provided for a hand signal or the curvature of the bus body is often such as to screen the signal if given. The use of such windows was carefully checked in Newark at corners where buses were making left hand turns and where general traffic ordinarily signalled the turn. The result of this check showed that the window was used only once in each ten left hand turns.

Upon the premise that it is a sound operating policy to help operators keep their hands on the wheel at all times, it is recommended that no regulation should be established providing for hand signalling. Such signals for warning purposes should be made through the agency of stop signals located at the rear of the bus and operated automatically. The motoring public is now educated to the stop-flash as an indication of some immediate action, preparatory to any movement which the vehicle may make.

(Not included in revised code)

#### OPERATOR'S GUARD RAIL

*Recommendation:* It is recommended that in city type buses a guard rail be installed to prevent passengers from obstructing the operator's view, but that no regulation should be made requiring a special partition of box-like construction to be constructed about the driver's seat.

*Discussion:* Where buses are designed for mass transportation and the carriage of standees, it is obviously important as a safety factor that some protection is quite necessary for the drivers against crowding passengers. For that reason, the above recommendation is made. However, since the so-called Parlor Car and Sedan buses are not designed for, and may properly be prohibited from carrying standees, it is believed that the application of this regulation to these types is unwarranted.

Partitions or enclosures are not recommended. There are several objectionable features to a partition behind or around the driver. Buses are almost all one man vehicles, the operator is also the conductor and as such must be in a position to attend to the needs of his passengers. Any partition interferes with the driver's ability to hear or be heard. Second, it may interfere with a clear mirror reflection of passengers and of vehicles approaching from the rear.

A partition does not furnish any protection to the driver that can not be furnished by the use of guard rails, which have been recommended. A partition adds weight, increases the original cost, making for unsanitary accumulations and increased haz-



ards in case of accidents. Any night driving advantages which may be presumed to result from partitions or curtains is now obtained by a modern construction of special fixtures which are shaded on the front side and by slanted windshields; these effectively eliminate glare in the operator's compartment.

(Not included in revised code)

#### SERVICE DOORS

*Recommendation:* All doors used or intended for regular entrance and exit of passengers shall have a minimum clear width of 24 inches. If such doors are rigid and swung from hinges at one side, the same shall in all cases open outward; if double hinged, combined with a sliding action as are commonly called jackknife doors, they may open either inward or outward at the option of the owner.

*Discussion:* Buses as manufactured at the present time have doors of adequate width to handle passengers. It is believed, however, that this regulation should be imposed as a cautionary measure against the manufacture of a bus body without consideration being given to the proper dimension of this door so that it will not be too largely influenced by other physical factors to the design of the vehicle.

Regulations on the location and the method of fastening for service doors have been seriously considered. Such regulation would be ill-advised not only from a standpoint of public policy, but because of a too rigid complication of motor vehicle specifications.

#### RULE 8.—SERVICE DOOR SPECIFICATIONS

Bus doors used or intended for a regular entrance or exit of passengers shall give a minimum clear opening width of 24 in.; if such doors are non-folding units swung from hinges on one side; the same shall in all cases open outward; if such doors are of double hinged folding type they may open either inward or outward at the option of the owner.

#### HINGE GUARDS

*Recommendation:* The hinges and door jams of all swinging doors opening outward shall be covered in such a way that closing the doors cannot harm passengers.

*Discussion:* In a great many cases passengers of motor buses have been harmed by getting their fingers injured when the doors of buses have been closed, as the jams were not covered to prevent them from inadvertently putting their fingers between them.

Doors which open inward, however, have the jam on the outside of the door so that there is no danger of passengers being injured. Therefore, the recommendation has been made only for doors which open outward.

(Not included in revised code)

#### EMERGENCY DOORS

*Recommendation:* Each bus of the city or parlor car type shall be equipped with at least one emergency door which shall open outward and conform to the following specifications:

- (a) Located in the left side at the rear of the bus body.
- (b) Having a minimum clear width of 24 inches.
- (c) Having, leading to it, an unobstructed aisle at least 8 inches wide.
- (d) Being conspicuously marked "EMERGENCY DOOR," with directions as to the method of opening.
- (e) Extending from the floor to the upper belt panel.
- (f) Having a fastening device that may be quickly released in case of emergency, but which shall be protected against accidental opening.

*Discussion:* It is recognized that a vehicle having regularly used service door or doors on one side should be properly equipped with some sort of auxiliary door at the rear of the bus on the opposite side which can be used in case of accident or damage preventing discharge of passengers from the service door or doors. It is even believed that it is to the benefit of the bus operator to have, perhaps, more than one such door at the rear of his vehicle and that such a practice should be encouraged but not required. Believing, therefore, that one door should be properly required, attention has been concentrated on its proper location. It is only on rare occasions that the emergency door is used. In case of a serious accident where a bus has turned over, the windows have been broken for escape with little or no thought of doors. The real value of

an emergency door lies in providing for orderly exit at the rear end of the bus in case of minor damages to the front end service door.

The largest proportion of accidents in bus operation are head on or rear end collisions making a center rear location particularly subject to damage. It is therefore most advisable that every means should be taken to guard the rear end of the vehicle. Spare tires at the rear serve as the most substantial protection, yet a center rear emergency door prevents the utilization of this very material safety feature.

Furthermore, a door located in the rear panel of the bus body weakens construction, as it is the only possible cross-sectional bracing position available. A door located therein would, therefore, be subjected to jamming though there might be no external indication of that condition.

From the foregoing conclusions, a side door location is most advisable. As between a right and left side location, it is believed advisable and logical that, when only two doors are provided, such as the service door at the front and an emergency door at the rear, they should be on opposite sides because of any contingency which might arise to damage one side of the vehicle. Two doors located on one side might be rendered inoperative by a single cause, whereas it is very unlikely that doors on opposite sides could be so damaged. Therefore, since a service door is invariably located on the right side at the front, the Committee recommends the emergency door requirement as given above.

#### RULE 9.—EMERGENCY DOORS

Buses to be approved for operation must be equipped with at least one emergency door which shall open outward and conform to the following specifications:

- (a) It must be located at or near the rear of the bus body.
- (b) It must give a minimum clear opening of 18 in.
- (c) It must be so constructed that no obstruction will prevent the passage of passengers through the emergency door.
- (d) It must be conspicuously marked on the inside "Emergency Door."
- (e) It must give a minimum vertical clearance of 48 in.
- (f) It must be provided with a fastening device that may be quickly released in case of emergency, but which shall be protected against accidental release.

#### DESTINATION SIGN

*Recommendation:* All buses shall be equipped with destination signs which can be read day or night under normal atmospheric conditions, at a distance of at least 100 feet ahead of the vehicle at all times.

*Discussion:* All common carrier motor buses should be equipped with some form of device by which the public is informed of the route or destination which such vehicles follow. The Committee, therefore, recommends the single front destination sign as defined above. It developed in the meeting of the Committee, that perhaps more destination signs should be required. However, it was agreed that States should impose only a reasonable number of regulations for the convenience of the public—that single destination sign located at the front of the vehicle is easily discernible and is sufficient to indicate to the public the service which is available by a given bus. It is undoubtedly to the advantage of the operating company to provide all the facilities by which the goodwill and patronage of the public may be obtained. In so doing it may be advantageous to provide side and rear destination signs. However, as in the case of emergency doors, the State should not go to the length of requiring complication of structure unless some material and very necessary benefit is derived. A single destination sign located at the front of the vehicle satisfying the requirements of such a sign as recommended is sufficient to adequately serve the public.

#### RULE 10.—DESTINATION SIGNS

Buses must be equipped with at least one destination sign which can be read day or night under atmospheric conditions, as defined, to one of normal vision at a distance of at least 100 ft.

#### TAIL LAMPS

*Recommendation:* Every motor bus shall exhibit a ruby

lamp located in the lower left hand corner of the rear of the bus body. This lamp shall be visible under normal atmospheric conditions from a distance of at least 500 feet of the rear of the bus.

*Discussion:* Tail lamps are required in all States under the Motor Vehicle Law. The specification which this Committee supports is that of the Hoover Uniform Vehicle Code. In certain States it has been the practice to require that tail lamps and, for that matter, any other lamps shall be of a certain specified dimension. It is believed that the distance requirement is much more advisable, as from time to time new lenses are being developed which so refract light that a required dimension becomes obsolete. The result is the material thing and not the method by which it may be attained.

The Hoover Uniform Vehicle Code leaves the color of the tail lamp to the option of the States as between ruby or yellow. This Committee wishes to go on record as favoring a ruby tail lamp as it represents, perhaps, 99 1/2% practice among automobile and bus owners; it finds no reason why a conflict should be permitted to develop between the several States by the institution of a yellow lamp among the regulations. It is not the color which is so important as the uniformity with which it is used.

#### RULE 11.—TAIL LAMPS

Buses shall be equipped with a ruby tail lamp located near an unobstructed position in the lower left hand corner of the rear end of the bus body or firmly attached in the same position to body accessories. It shall be of sufficient size and candle-power to be clearly visible under atmospheric conditions, as defined, to one of normal vision, for a distance at least 500 ft. to the rear of the vehicle.

#### REGISTRATION PLATE ILLUMINATION

*Recommendation:* On each bus there shall be provided at the rear an independent white lamp or the same as a part of the tail lamp which shall reflect upon the number plate so that the same is legible under normal atmospheric conditions at a distance of 50 feet.

*Discussion:* In conformity with the Uniform Motor Vehicle Code, it is deemed advisable to include among bus regulations the very essential requirement that rear registration plates shall be illuminated at all such times as any other rear lights shall be lighted.

#### RULE 12.—REGISTRATION PLATE ILLUMINATION

Buses shall be equipped with a separate white lamp or the same as an integral part of the tail lamp located in the rear end of the bus body or firmly attached in the same position to body accessories which shall reflect upon the registration plate so that the same is legible under atmospheric conditions, as defined, to one of normal vision at a distance of 50 ft.

#### SPOT LAMPS

*Recommendation:* Any bus may be equipped with not to exceed two spot lamps, but they shall be so aimed and used upon approaching another vehicle that no part of the beam will be directed to the left of the center of the road nor more than 100 feet ahead of the bus.

*Discussion:* In many bus operations, it has been found that a spot lamp is quite necessary to the operator in picking out the right or left hand limits of the roadway, particularly in making turns. Such a light, therefore, becomes an adjunct to the safety of bus passengers, so that the use of such a lamp or lamps should not be prohibited but care should be taken that they are properly used. Therefore, the regulation of the Hoover Uniform Vehicle Code is included here with the support of this Committee.

#### RULE 13.—SPOT LAMPS

Any bus may be equipped with not more than two spot lamps but they shall be so aimed and used upon approaching another vehicle that no part of the beam will be directed to the left of the center of the road nor more than 100 ft. ahead of the bus.

#### SIGNAL LAMPS

*Recommendation:* All buses shall be equipped with at least one signal lamp, yellow in color and connected so as to be

lighted automatically when the speed of the vehicle is reduced. This lamp shall be located above the tail lamp, but below the top of the middle belt line; it shall be visible to the rear a distance of 500 feet under normal atmospheric conditions.

*Discussion:* In considering the method by which vehicles approaching the rear of a bus should be signalled to indicate the maneuvering of the latter, the Committee was unanimous in the belief that the bus operator should keep his hands on the steering wheel as much as possible and, therefore, went on record against the use of hand signalling by bus drivers. Realizing, however, that a signal is necessary, it is believed that one operated automatically and independent of the desires or intentions of the bus driver should be provided. Such a signal should be a light of ample intensity and size to indicate either by day or night at a considerable distance, the reduction in speed of a motor bus. Yellow is recommended for the reason that it will thereby be distinguished from the ruby tail light. A driver of a passenger car seeing ahead a red light does not know whether it is a tail light burning constantly or a signal light burning on a vehicle standing still having been lighted when the brakes were set. However, in contrast with a ruby light, a yellow light indicates immediately that a vehicle is slowing down or is standing with brakes set upon the highway. This is the recommendation of the Hoover Uniform Motor Vehicle Code and is generally receiving approval from all people who are seriously considering the lighting of motor vehicles upon our highways. In certain States it has been the practice to require tail lamps, and for that matter, any other lamps, of a certain specified dimension. It is believed that the distance requirement is much more advisable, as from time to time new lenses are being developed which so refracts light that a required dimension becomes obsolete. The result is the material thing and not the method by which it is attained.

#### RULE 14.—SIGNAL LAMPS

Buses shall be equipped with at least one signal lamp, red or yellow in color, and connected so as to be automatically lighted when the speed of the vehicle is reduced by application of brakes. This lamp shall be located above the tail lamp but below the top of the middle belt panel or line. It shall be visible under atmospheric conditions, as defined, to one of normal vision at a distance of 500 ft. to the rear of the bus.

#### COURTESY LAMPS

*Recommendation:* It is recommended that no requirement should be imposed requiring a special lamp on buses within the legal width limitations.

*Discussion:* It seems necessary to define this title as there is no standardized name for the light. It is that white light often required to be suspended on the left side of a vehicle when the same exceeds a certain width. This Committee believes that the number of lights required on a motor bus both front and rear indicates fully its size and character and that this extra light is not necessary and serves no particularly valuable purpose.

(Not included in revised code)

#### MARKER, CLEARANCE OR IDENTIFICATION LAMPS

*Recommendation:* Each bus shall be equipped with two rear marker lamps ruby in color and located in the upper corners of the rear of the bus body which shall be visible under normal atmospheric conditions at least 300 feet, and front marker or clearance or identification lamps purple in color and visible 500 feet under normal atmospheric conditions.

*Discussion:* Marker lamps are customarily used on all public carriers to indicate the bulk of the vehicle as well as to make it readily and quickly discernible in the darkness. The lights are placed in the extreme upper corners for two reasons—first to indicate the width of the vehicle and, second, so that the bus may be visible to another on-coming vehicle over a road hummock before the regulation tail light can be seen. Since the rear marker lights serve the same purpose as a tail light, it is logical that the color required should be invariably ruby. Purple is used in front to designate public service vehicles.

#### RULE 15.—REAR MARKER OR CLEARANCE LAMPS

Buses shall be equipped with two rear marker lamps, ruby in color and located near the upper corners of the rear of



the bus body to show as nearly as possible the extreme width of the vehicle, yet keeping the lamps in the rear plane of the bus body. These lamps shall be visible under normal atmospheric conditions to one of normal vision at a distance of at least 300 ft.

#### RULE 16.—FRONT IDENTIFICATION-MARKER LAMPS

Each bus not in city service shall be equipped with two front identification-marker lamps, purple in color and located near opposite upper corners of the roof or body indicating the width of the body. These lamps shall be visible when lighted under atmospheric conditions, as defined, to one of normal vision at a distance of at least 500 ft. ahead of the vehicle.

#### INTERIOR ILLUMINATING LIGHTS

*Recommendation:* All buses shall be equipped with interior lights giving an illumination of at least one rated candle power per square foot of floor area to be determined by the maximum inside width and the maximum inside length from the instrument board to the rear of the body.

*Discussion:* All buses used as common carriers should be reasonably lighted for the comfort of the passengers. The regulation above has been recommended only after several tests to determine its sufficiency. It now exists as a regulation in two States but with a different denominator. The volume of light is the same.

The floor area has been used as the basis of measuring light because of the many variations in measuring seating capacity the seat being the unit employed in present regulations.

#### RULE 17.—INTERIOR ILLUMINATING LAMPS

Buses shall be equipped with interior lamps sufficient to give an evenly distributed illumination of at least  $\frac{3}{4}$  rated candle-power per sq. ft. of passenger deck area. The deck area is to be determined by the maximum inside width of the deck and the maximum inside length thereof from the plane of the instrument board to the rear of the bus.

#### DASH SIGNAL LAMPS

*Recommendation:* All buses having more than two service doors other than those manually operated shall be equipped with annunciator lights on the dash which shall be lighted when such doors are open.

*Discussion:* When buses were first put into operation, the door catches and the strength of wiring in buses were so weak that the doors would often come open and the lights go out without the knowledge of the driver. For that reason, one of our States required that annunciator lights, or what may be called dash signal lights, should be installed in series with the rear signal light, the emergency door and the multiple doors of sedans which would light when the doors were opened or the light bulbs should fail.

Investigation discloses that the complicated wiring is constantly out of order so that the dash signal lamps do not invariably tell the driver of abnormal conditions; the signal lights being more apt to fail than the principal light or mechanical arrangement with which it is connected. Furthermore, the latching devices on motor buses are now strong and substantial and doors when once closed do not come open, being protected with fool proof safety bars. Furthermore, as bus transportation has developed, daily inspection of motor buses is quite the ordinary thing; and, as a matter of fact, may be required as an operating regulation so that the purpose for which these lamps were originally required has been destroyed. It is recommended therefore, that the regulation shall not be imposed against any motor bus except those of the sedan type where a series of doors are located along the right hand side each entering a separate passenger compartment as these doors are opened by hand and may be left open accidentally. In buses having multiple doors which are manually operated, the requirement should not be applied as their closing is beyond the control of passengers. The driver is responsible for their closing, automatically by a lever.

#### RULE 18.—DASH SIGNAL LAMPS

Sedan buses shall be equipped with an annunciator lamp on the dash which will be automatically lighted when any door is open.

#### STEP LAMP

*Recommendation:* Each bus excepting those of the sedan type buses shall be equipped with a light so placed that it will illuminate the steps at service doors when the same are open.

*Discussion:* A step lamp is one so located that when the regularly used service doors are opened, it will be lighted automatically to illuminate the step of the bus. This was believed by the Committee to be a most advisable requirement and is recommended as a part of the Uniform Motor Bus Specifications Code by all members with practically no discussion.

#### RULE 19.—STEP LAMPS

Buses, excepting sedan types, shall be equipped with a lamp or lamps so placed that the step or steps at the service doors shall be clearly illuminated when the doors are open.

#### SPACE FOR PASSENGERS

*Recommendation:* In city type buses, it is recommended that a lineal dimension of 16" per passenger should be used to determine the seating capacity of a motor bus for purposes of taxation and estimating capacities on seats designed to seat 3 or more passengers. No specifications should be set requiring this dimension as a minimum space for passengers on single seats obviously designed to accommodate two passengers.

*Discussion:* The amount of seat space required per passenger in actual operation varies between passengers; therefore, no average can be determined. Practice over many years has dictated that a single seat designed for three or more passengers shall have an allowance of 16" per passenger; this is recommended for purposes of taxation. As only so much seating space is available in a bus, nothing is gained by specifying a certain proportion per person; the fullest capacity of the seats will be utilized by the passenger load under any circumstances.

#### RULE 20.—SPACE FOR PASSENGERS

In the city type bus a lineal dimension of 16 in. will be used to determine the seating capacity of seats obviously designed for more than two passengers.

#### aisle space

*Recommendation:* Every city type bus shall be so constructed that a radius 14" long from the center of the aisle end of any seat shall encounter no part of the seat or seats on the opposite side of the aisle, parlor car aisles to be measured in the same place but limited by 12" radii.

*Discussion:* This dimension has been determined for comfort and convenience to a passenger moving through the aisle and to seated passengers to be the minimum width of aisle in buses of 96 inch width. Should any state have or retain a maximum width of vehicle less than 96 inches the minimum aisle width for such a state must be reduced in the following proportion  $96:3.66$  (96—State Max.)  $\div$  State Max.  $\therefore X$ : (12 or 14) depending on type of bus otherwise aisle space must be taken out of seat width so that they become uncomfortable to passengers.

#### RULE 21.—aisle space

City type buses must be so constructed that a radius 14 in. long from the center of the aisle end of any seat shall encounter no obstructing part of the seat or seats on the opposite side of the aisle. Parlor cars must be constructed to fulfill the requirements of this rule with a 9 in. radii.

#### KNEE ROOM

*Recommendation:* Every bus shall have a minimum clearance between the front of the back of the seat and the back of the next seat forward measured at the seat line of at least 24".

*Discussion:* It has been recognized that a bus passenger should have reasonable knee room for comfort. The committee has undertaken several measurements and has determined that the minimum clear dimension required for the comfort of the average passenger is 24" from the face of the seat back to the forward obstruction at the seat line. Any minimum in excess of that recommended here is excessive and a prohibition against the full economical seating capacity of a vehicle.

#### RULE 22.—KNEE ROOM

Buses to be approved for operation shall have a minimum clearance between the front of the back cushion and the nearest forward obstruction of 24 in. at the seat line.

## CHASSIS FRAME

**Recommendation:** No regulation should be made to determine the dimensions on specifications of any kind or nature applying to the chassis frame of a motor bus.

**Discussion:** The design of a motor bus can be left entirely to the manufacturer with the best assurance that the strength and construction presented as strong and safe as is reasonably possible, consistent with the best available engineering knowledge. The regulation of such dimensions or materials as are customarily used enters upon a field of automotive engineering which this committee does not believe any State Commission should find it necessary to supervise or in any way restrict. It has not been necessary to impose these specifications on railroad or street railway equipment as their standards are set by organizations representing each respectively. Similar standards will be determined by the same methods in the automotive transportation field. In fact, progress has been definitely indicated in that direction through the agency of the Motor Coach Division of the Society of Automotive Engineers. In reaching this disposition, the Committee has had the advice of automotive engineers and has undoubtedly considered most every phase of automotive design and construction even to the chemical composition of the steel and other metal alloys which are available for use in the various chassis parts. It has considered, for instance, drive shaft supports, sometimes introduced to guard against a possible contingency of a broken drive shaft falling to the ground while a bus is in motion. The Committee recommends against any form of regulation such as a drive shaft support because the appearance of such regulation based upon the same reasoning by which it may be established, could be used to extend regulation to every part of bus construction. In other words, if any such regulation is required it is quite as reasonable and quite as justifiable that engineers should be forced to develop some safety precautions which would prevent accident in case a bus should lose a wheel or a steering wheel come off, or a broken axle, or any number of the innumerable contingencies which might occur in the operation of any motor bus. As was previously supposed, this is a field which public authorities should have no desire to regulate.

Taking the consideration further, the Committee has discussed and recommends against specifications of this nature covering the tread; toe, dish, spread, size and hub fasteners of wheels, the size of steel wheels, methods of fastening steel wheels to the column, types of gears, location of tie rods, their size and design, springs, their length, strength and design, location of insulators for batteries, strength, size, material and angularity of drive shafts, the design, size and strength of the fenders, etc.

(Not included in revised code)

## BRAKES

**Recommendation:** Every motor vehicle when operated upon a highway shall be equipped with brakes adequate to control the movement of and to stop and to hold such vehicle, including two separate means of applying the brakes, each of which means shall be effective to apply the brakes to at least two wheels and so constructed that no part which is liable to failure shall be common to the two. All such brakes shall be maintained in good working order.

**Discussion:** In conformity with an established principle, in connection with this problem, the above recommendation is quoted from the Uniform Vehicle Code.

(Action deferred until United States Bureau of Standards submits recommendations for code of National Conference on Street and Highway Safety)

## GASOLINE TANKS

**Recommendation:** Gasoline tanks shall be installed, filled, drained and vented outside of the body.

**Discussion:** The only danger resulting from a gasoline tank is explosion or fire in case of serious accident. In either case the possibility of damage to passengers is minimized by being outside of the body. In case of fire resulting from a bursting tank, any insulation against fire is ineffective as far as adding protection to that already found in the modern method of bus floor construction. The recommendation is sufficient to afford adequate protection against any possibility of danger.

## RULE 23.—FUEL TANKS

Fuel tanks shall be installed, filled, drained and vented outside of the body shell.

## BUMPERS

**Recommendation:** All buses shall be equipped with rear bumpers designed for heavy duty service. They shall be attached to the chassis frame, but shall extend at least 4" beyond the bus body at the frame level.

**Discussion:** As subsequently stated in the discussion of emergency doors, the rear end of a bus is particularly subject to collision. It is, therefore, believed advisable to furnish the recommended protection to those passengers who may be seated in the rear seats.

## RULE 24.—BUMPERS

All buses shall be equipped with rear bumpers designed for heavy duty service.

## EXHAUST PIPE

**Recommendation:** The exhaust pipe shall be extended to the rear end of the bus, or to a point immediately in front of the left rear wheel, or to the roof of the vehicle, (chimney style).

**Discussion:** The exhaust pipe should be terminated at a point where the exhaust gases will be least likely to be drawn into the passenger compartment. From many tests which have been made by manufacturers either of the three points of termination recommended give similar results, anyone of which has many advantages over under body exhaust.

## RULE 25.—EXHAUST PIPE

Exhaust pipes on all buses shall be extended to the rear end of the bus or to the roof of the vehicle in chimney fashion.

## MUFFLER

**Recommendation:** No bus shall be equipped with a cut out but shall have a muffler by which the exhaust noise may be reasonably quieted.

**Discussion:** Motor buses with their larger engines must necessarily have an exhaust considerably noisier than the lighter and smoother running passenger car. While the exhaust cannot be fully quieted by any muffler, buses are invariably more quiet than the numerous motor trucks which are to be found in all traffic. It is recommended, however, that every bus should be equipped with a muffler, so that there is reasonable evidence of the desire of the operator to keep the noise of his vehicle at a minimum.

## RULE 26.—MUFFLER

Buses to be approved for operation shall not be equipped with a cut-out; but they shall have means by which exhaust noise may be reasonably quieted.

\* \* \*



View of the Emergency Door of Observation Type A.C.F. Coach of Boston & Maine



Good Returns from

## SPECIAL PARTY SERVICE\*

By A. T. Warner

General Manager in Charge of traffic, Public Service  
Co-ordinated Transport

WE often hear the motor coach business spoken of as being an industry still in its infancy. This is undoubtedly true at this stage of the game. Being in its early period of development, we are daily discovering new possibilities and new fields of endeavor which none of us heretofore dreamed existed.

One of the greatest by-products of the operation of a fleet of motor coaches is the development of special business. Here lies a wealth of business, the surface of which has barely been scratched. It is profitable, easily handled and of immense value from an advertising and public relations point of view. For most operators it is obtained with little trouble and handled at a low cost, because most of it comes at a time when equipment would normally be idle.

We started in the motor coach business in the latter

*"Our problem has been to build up the use of equipment which is normally idle on Saturdays and Sundays. We are . . . daily finding new ways to offer chartered motor coach service to the public. It is well worth the effort."*

part of 1923. This undertaking developed very rapidly through 1924, 1925 and 1926, and during that period we were too busy perfecting our organization and developing vehicles to pay much attention to the building up of special business. Each year, however, more

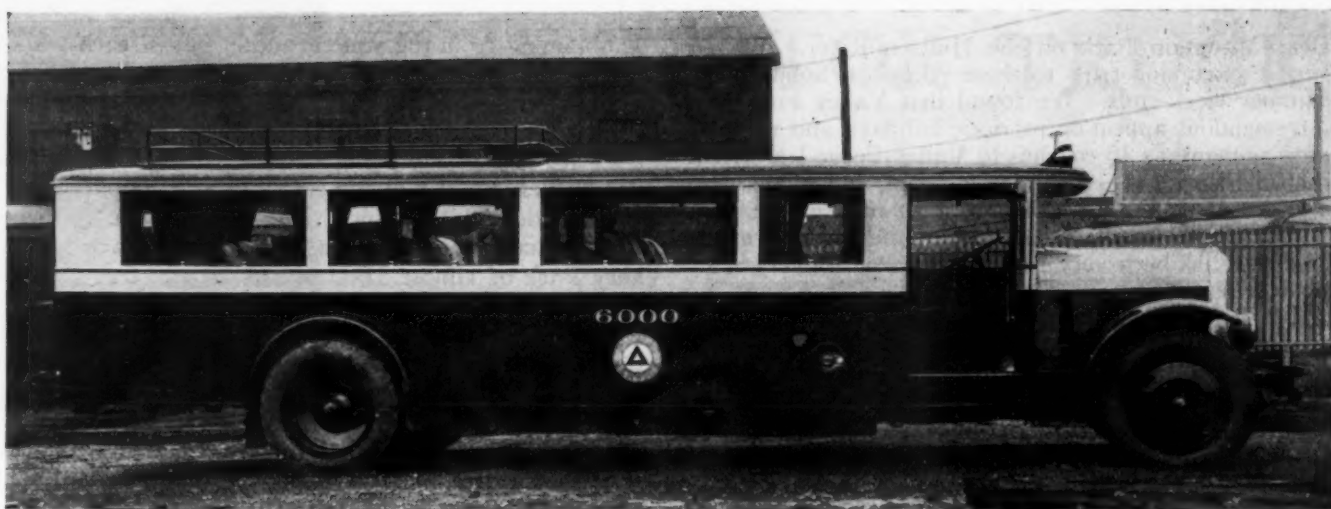
and more such business came to us practically unsolicited, and we saw that there was an immense amount of it available with little work.

We, therefore, in January, 1927, appointed a passenger agent and created for him a small organization, whose duty it was to develop actively this special business. The record of this department speaks for itself. In 1927 the number of motor coaches we chartered for special parties was 8,106. This was the first year in which the passenger agent's organization was functioning. In 1928, this number was increased to 13,250, an average of 36 chartered motor coaches per day. During the first five months of 1929, a comparison with 1928

\* From a paper presented before the National Motor Bus Division, American Automobile Association, at Buffalo, N. Y., on July 1.



Some of the Public Service Motor Coaches which Carried 150 Members of the Allgemeiner Deutscher Automobile Club (of Germany) on a 15-Day, 2,800-Mile Trip into Canada and the Middle West



One of the Motor Coaches Used in Chartered Service

shows an increase of 55%. At this rate, 1929 will show almost 21,000 chartered motor coaches for the year, or almost 60 per day.

All this business came either voluntarily or was secured by an organization of seven men, of whom five devote only part of their time to the work, and who have been at work on the problem for less than two years and a half. The beauty of it is that the real demand comes on week-ends, particularly in the summer, when our schedules do not call for the full peak operation demanded for week-day traffic requirements. Our maximum evening week-day rush calls for slightly less than 2,000 coaches. Saturdays, our maximum schedule is not over 1,800, and on Sundays, it is considerably less than that, probably not over 1,400. We, therefore, have at least 200 motor coaches available for Saturday's special work and over 500 available for Sunday's chartered business. This equipment is on hand, and consequently, for the business as we are developing it, does not require additional investment for equipment.

#### Two Types of Equipment; Two Charges

Our fleet is composed largely of two types of equipment; first, the city service motor coaches, designed for mass transportation in congested centers; second, the so-called de luxe equipment, or as we term them, super-service coaches, which have a different type of seat and a different seating lay-out, carry no standees (or a limited number) and are operated at fares higher than mass transportation rates, and in interstate service.

With the two types of equipment, we have rates for chartered service varying with the type. For city service coaches, we charge 50 cents per mile for the first 50 miles, 45 cents per mile for the next 25 miles, and 40 cents per mile for all mileage over 75. In addition to this, we charge \$2 per hour or fraction thereof for layover time unless the mileage charge exceeds \$50. Where the elapsed time exceeds 15 hours, however, layover time is added. To this rate is also added any necessary bridge, ferry or tunnel tolls and parking charges. The minimum rate per coach, regardless of mileage, is \$10.

For super-service motor coaches, we charge 60 cents per mile straight, adding the layover charge of \$2 per hour in the same way. On trips where it is impossible to figure mileage, such as funerals, etc., we charge a flat rate of \$5 per hour or fraction thereof, from the time the coach leaves the garage until it returns. Our

coaches seat approximately 30 passengers, so that for a full load the charge is 2 cents per passenger per mile or less.

Our special business as it is developing consists almost entirely of one day trips. We have an ideal territory to offer for one-day excursions. There are the popular beach resorts along the Jersey coast and on Long Island. These comprise all types of beaches from Coney Island and Rockaway to those at Atlantic City and Cape May. We have the scenic beauties of the Hudson River and the lakes in the Jersey hills, such as Greenwood Lake and Lake Hopatcong. We have the Delaware Water Gap and the Pocono Mountains. All these different types of resorts are popular with our patrons in the large urban communities. During the winter season, we carry large numbers of theatre parties to the New York theaters from suburban North Jersey, and to a somewhat less extent to the Philadelphia theaters from suburban South Jersey. Probably 95 per cent of the total mileage operated in chartered service is covered in one-day trips.

#### Long Trips Popular

We have, however, several outstanding examples of long trips in which our coaches have been chartered for weeks at a time and have covered as much as 5,000 miles during a trip. Every winter for the last three years, we have sent several coaches to Florida with special parties. Trips to Canada are also popular. Our patrons go to Quebec in winter for the winter sports, and to various Canadian points in the summer on scenic tours. We sent eight of our de luxe coaches with the Allgemeiner Deutscher Automobile Club of Germany on a trip throughout the middle west last fall. This trip started at New York and covered Washington, Cincinnati, Chicago, Niagara Falls, and then returned to New York, a distance of over 2,000 miles, requiring 16 days.

The business I have so far described is strictly chartered business, in which the party hires the coach and makes its own arrangements. In addition to this chartered business, we are developing special excursion trips to points of interest; selling tickets for the trip and ourselves making arrangements for the passengers. We pick out points of special interest such as the Washington Headquarters at Valley Forge; the United States Naval Aviation station at Lakehurst (we carried 1051 passengers from Newark to Lakehurst last winter to see the "Graf Zeppelin"); Crystal Cave near Reading; and



Bear Mountain Park on the Hudson River. We advertise excursion trips to these points on holidays and summer week-ends. We found that Valley Forge had a tremendous appeal on patriotic holidays, and we operated as many as 16 coaches to Valley Forge last Washington's Birthday. The fare charged included guide services at Valley Forge and a substantial chicken dinner at a hotel on the grounds. Another type of excursion that has been very popular has been Sunday afternoon trips from northern New Jersey to the Bronx Zoo. Football games during the fall are covered also by this type of service.

I want to describe briefly the way our passenger agent's organization is functioning. They started out immediately to compile a mailing list containing names and addresses of all organizations and individuals who had used this service in the past. They then established contact with all churches, Sunday schools, lodges, athletic associations, large employee organizations, political clubs, and high school teachers' associations and athletic coaches. They followed up real estate developments where sales of lots were taking place. They keep a continuous up-to-date list of officers of these organizations and particularly the chairmen of entertainment or outing committees, and keep mailing to this ever-growing list literature showing popular trips, together with the rates for motor coaches for each trip.

They follow the daily press carefully, and whenever they note an organization which is planning to hold an outing, they make a personal call on the person in charge and suggest motor coaches as a means of conveyance. They watch the social columns for news of theater parties and establish contact with the hostesses of such parties.

High school athletic activities furnish a considerable part of the chartered business. This has been developed

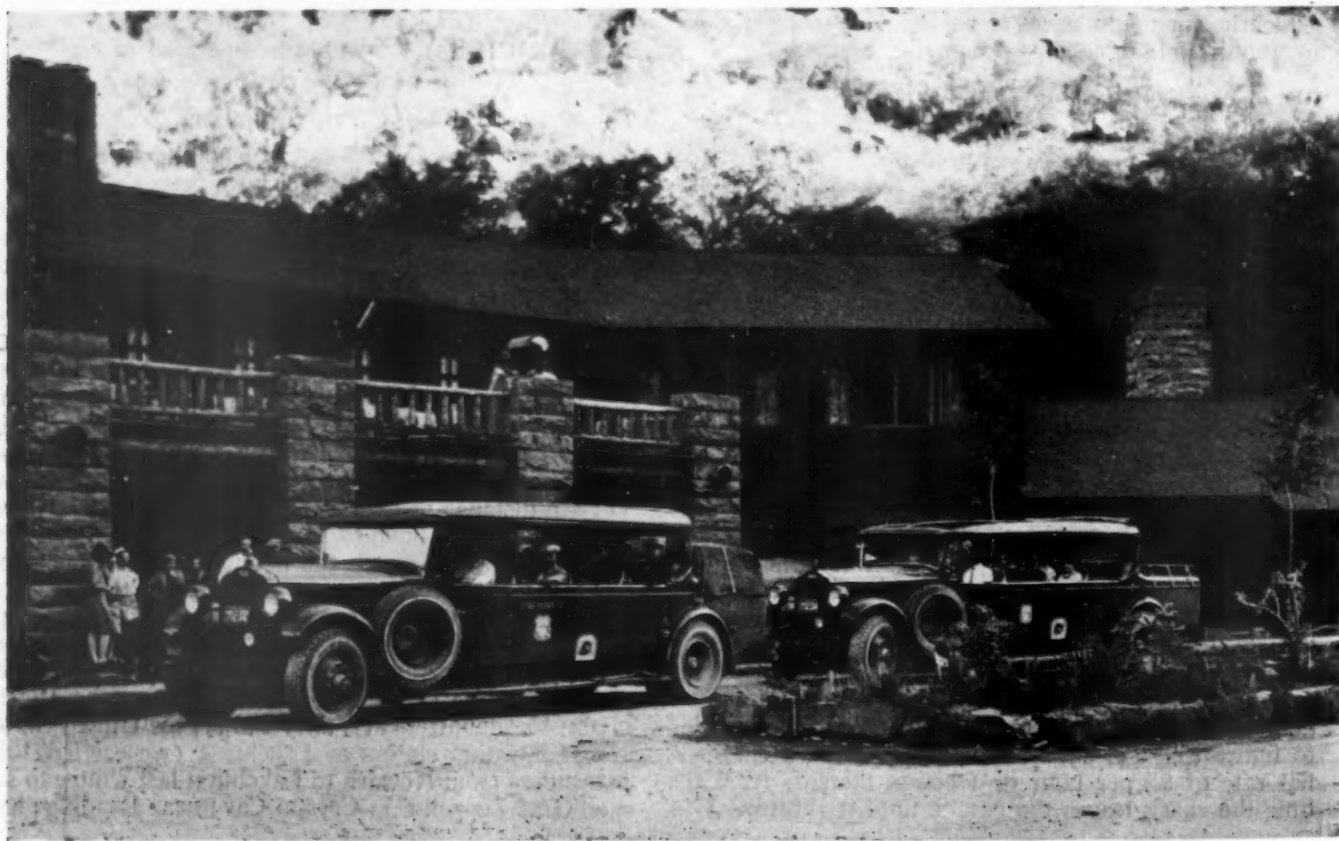
by obtaining from the athletic authorities of each school their schedule of games and then by sending to the coach a letter quoting rates for each game away from home. The employees' organizations of our large industries are continually being canvassed for their outings and excursions. I will cite a particular example of this. The Prudential Insurance Company Athletic Association annually runs an excursion from Newark to Asbury Park of almost 3,000 people. Up to last summer it had always used special trains, running in three or four sections. Last year we took up with the association members the question of using motor coaches which would take them direct to the beach, and with some misgivings they consented to try it. We operated 96 coaches, carried over 2,900 people without a single hitch, and after the trip was over they declared that they would never again return to the railroad.

This was in spite of the fact that the charge we made was 25 per cent higher than the rate offered by the railroad.

As you can see, our problem has been to build up the use of equipment which is normally idle on Saturdays and Sundays. We are making considerable progress along this line and are daily finding new ways to offer chartered motor coach service to the public. It is well worth the effort.

A COMMISSION to study the question of a national system of express highways to relieve traffic congestion has been proposed in Congress by United States Senator Lawrence C. Phipps of Colorado. According to the proposal the commission would be composed of two senators, two representatives, an official of each of the six government departments of Treasury, Agriculture, Post Office, Commerce, Labor and War, and a traffic expert, familiar with industrial, military and aviation problems.

\* \* \*



Zion Lodge in Zion National Park, Utah, with Motor Coaches Operated by a Union Pacific Subsidiary



A. J. Brosseau

# THE MOTOR TRUCK

## *A Helper, Not a Competitor, of the Railways\**

By A. J. Brosseau

President, Mack Trucks, Inc., Vice-President,  
National Automobile Chamber of Commerce

**T**HE motor truck is not a competitor of the railroad. It does not take any business from the railroad that is profitable to the railroad. Nearly all of the merchandise transported by trucks on the highways is what is known as l.c.l. and is transported in the relatively short distance zones. The truck furnishes an entirely different type of transportation from that of the railroad, and the railroad is not equipped to render such service. *That is my premise.*

I maintain that the business lost to the truck is not harmful to the railroads, but is of as much benefit to them as it is to the user of the truck.

I further maintain that the expansion of truck service in the short-zone field has contributed to the marvellous improvement in railroad transportation during the last few years. By relieving the railroads of l.c.l. and short-haul traffic, which congested terminals and tied up equipment, the truck has made it possible for the railroads to use their equipment to quickly carry long haul, profitable business.

I shall give you proof that my statement is correct, but before doing so, will say that there is some truth in the statement "that nearly all we know about trucks and trucking and highway transportation is not so." We are told, for instance, that the trucks "hog the road"; that they ought to be put out of business, so that automobiles may move more freely; that they do not pay for the use of the road; and that they compete with the railroads on free highways, which the railroads have built or have helped to build. It is suggested that they should be regulated as other transportation facilities are regulated. These are as many high spots as I can do justice to in a brief space.

### Public Necessity Put Trucks on Roads

As to the first statement, that trucks hog the roads: Before condemning the truck and ruling it off the road, would it not be well to remember it is serving every one of us? It is performing a service in which everyone participates directly. It is transporting all sorts of commodities—food, milk, merchandise, and products of farms, stores and factories. You are just as much interested in the truck you see on the highway as if you owned it. The truck owner or the driver is your servant, acting in your stead, and he is not doing it for fun. If you did not need him he would not be there. The reason the truck is on the road is because it renders a service which is needed, and which cannot be

performed by any other facility. It operates because the user wants the service it performs. If you will make an analysis of the why of truck service, you will find that the first reason is because you or your customer want, p. d. q., the merchandise that it is transporting.

### Roads Built by All the Public

The public, generally, and not the automobile user alone, has built the roads. In addition to private automobile use, the roads can be put to the useful service of carrying on transportation generally. Especially so, if highway transportation serves the user better than any other form of available transportation. I want to impress the fact that the highway has an economic status.

As to competition—and my statement that there is no competition with the railroads—there are some who will insist that there is a little competition. If there is, it is very slight. Government surveys have developed the fact that the local distribution of commodities constitutes the bulk of the net tonnage carried by trucks. This is merchandise in the process of distribution from seller to buyer, from the factory and farm to the store, from the store to the consumer's doorstep, and amounts to 70 per cent and more of the total net truck tonnage. The balance of the traffic is largely in the short-haul area, thus government surveys showing an average trip of 23 miles in Connecticut and Maine, 24 miles in Pennsylvania, 26 miles in Cook County, Ill., and 31 miles in California. This report (October, 1926) further states: "The volume of tonnage in the long haul zone is comparatively small and decreasing in importance. In Ohio, 10.6 per cent, in Pennsylvania, 6.9, and in Cook County, Ill., 5.4 per cent of the tonnage is hauled over 60 miles. This movement depends on speed of delivery, or some special characteristic of the commodity shipped, such as household goods." The statistics regarding this matter are voluminous, convincing, and rather startling.

### Common Carriers Haul Only

#### 1 to 2 Per Cent of Truck Tonnage

The statement has been made that there are 3,000,000 trucks in this country. To some extent, this is an understatement, because the number of trucks in use is increasing rapidly. Government statistics have developed the fact that of these 3,000,000 trucks, interstate "common carriers" handle but 1 to 2 per cent of the total tonnage hauled by truck. My definition of a

\* From an address before the National Industrial Conference Board and the Eastern Railroad Executives Association in New York on April 18.



"common carrier" is an organization which has freight receiving and delivering stations, with vehicles traveling over a regular route, from station to station, on a definite schedule, accepting freight from all who offer it and delivering it to the consignees at their stations. That is how a railroad operates, and I maintain that the same yardstick must be applied to highway transport as to rail transport. The services must be comparable, if the two carriers are to have the same designation.

In addition to the trucks which can be classed as "common carriers," there are what are known as "contract carriers." "Contract carriers" maintain business under definite contracts, with a single firm, or, in some instances, with a few firms which for one reason or another do not own trucks. They are not "common carriers" but are, in fact, a subsidiary, if you please, of the farmer, the merchant, or the manufacturer, who does not own a truck.

Commercial truckers' vehicles were 17 per cent of the total loaded trucks on the Cook County highways; 8.7 per cent on the Maine highways, 13.6 per cent on the Pennsylvania highways, and 21 per cent on the Ohio highways. These operate either for hire or under contract. Approximately 75 per cent of the commercial haulage in Connecticut, from 60 to 65 per cent in Pennsylvania, and 50 per cent in Ohio, is contract hauling.

The balance of the 3,000,000 trucks—or from 80 to 90 per cent—are owner-operated. Some of them are in the hands of the farmer, the truck gardener, and others engaged in a business which makes it desirable for them to ship directly to the factory, store, or user. Many of my Yankee friends, in New England, own their trucks and deliver their merchandise to their customers in New York and elsewhere. Generally, they are loaded late in the afternoon, sent over the road during the night, and the next morning are ringing the customer's door-bell asking to be let in. That sort of service seems to be popular. The railroads are not equipped to render such service, and in nearly every instance where they attempt to do so with their equipment, the operation is not profitable.

Reference has been made to regulation. I speak of motor coaches, not trucks. There is some merit in the statement that competing facilities should be treated alike. If one is regulated, the other ought to be. This is true of the motor coach, because, in order to be successful, it should be a "common carrier," comparable in every way to the rail carrier, and should have terminals, stations, schedules and uniform rates.

Referring to the truck, I insist that the service rendered by the truck is not in any way comparable to the service rendered by the rail carrier. This is true even of the trucks which might be classified by some as "common carriers." These vehicles, in almost every instance, pick up at the store or factory door at the point of origin, as well as at their own station, and deliver to the factory or store-door, or the home of the buyer, at destination. They are all equipped to render special service with respect to the type of commodity, and very generally depart from a regular route. This special service would not be possible if the trucks were under the railroad type of regulation.

Granting, however, that an attempt be made to impose identical regulation on services which are not comparable, may I ask if you believe it practicable, or advisable, or in the public interest, to try to regulate these trucks which carry 1 to 2 per cent of the tonnage when the "contract carriers" cannot be regulated? This has been tried, and the Supreme Court of the United

States has held that you cannot, by law, compel a truck operator to act as a "common carrier," if, as a matter of fact, he is a "contract carrier." If a law is passed regulating the "common carrier," what is to prevent the "common carrier," if he does not care to operate under such a law, from changing over and becoming a "contract carrier."

Finally, if regulation is imposed upon "common" and/or "contract" carriers, is there anything to prevent those who desire to avail themselves of highway transport from buying and operating their own trucks? You cannot prevent the use of motor trucks by any kind of regulation if the public needs and wants highway transportation. As long as the road is there, and the demand for highway transportation service exists, you will find merchandise moving over the highway, whether the designation of the vehicle is "common carrier," or "contract carrier," or owner-operated.

In 1922, I was asked by the Merchants' Association of New York to make an address on the subject "Is Highway Transport an Aid to the Railroad?" There were not as many trucks in use then as there are now, and they were not as popular as they are now. I shall not read all the address but will refer to one statement, because, in the light of subsequent events, it was more or less a prophecy:

"As a matter of fact, the public, and not the motor truck owner, or the railroad, will decide how far highway transportation may be developed."

That statement was made seven years ago. I make it again. The service rendered by the truck is responsible for the increased use of the truck and a better understanding of highway transport during the last seven years. I do not believe the truck operator has been given more consideration than he deserves. I do not believe he will get any less consideration than he deserves.

In closing, let me refer to the part the truck would play in the economics of the railroad, if it were accepted as a unit in their operation, rather than considered as a competitor. The American Bankers Association has issued a pamphlet entitled "Automotive Transportation and Railroads—A Study of Relationships now Developing Between Highway and Rail Transport." It contains much information and its conclusions seem to me to be very sound. There are several tables illustrating the amount of savings made by different railroads that have installed trucks to replace and supplement rail operation. Some of the illustrations are startling and make one wonder why the railroads, in their efforts to render better service to the public, and to improve their own financial situation, are not making more progress toward adopting the truck as a part of their facilities.

\* \* \*



White Motor Coach with Lang All-Metal Body in Missouri Pacific Highway Service

# ADVERTISING

## *The Greyhound Lines*

By W. R. Fowler, Jr.

Manager, Advertising Dept., Motor Transit Management Company

**I**N working out the advertising problems of the Greyhound Lines, there has been little precedent to follow, so young is the entire motor coach industry. Scarcely more than fifteen years ago the first coach line was started. And since that time there have been numerous motor coach companies of varied sorts and descriptions. It was not, however, until a few years ago that any such company was so large as to be vitally concerned with the necessity of an extensive and well planned advertising campaign. There had been, of course, a certain amount of money spent in this direction, but for the most part the effort was spasmodic and haphazard; an ad was run here one day and somewhere else the next, for the purpose of featuring a new line, a low fare, or to "buck" some upstart competitor with a new coach or two.

The fact is that the average operator did not believe in advertising, and figured any sum spent in this direction, no matter how small, was money thrown away, which only tended to keep him in the "red". And neither was his stand without some justification, for coach lines of a few years back were for the most part organized to meet an actual transportation need in communities partially or wholly away from the railroads. Today conditions have been completely altered. With the vast network of motor coach lines in all parts of the country, we find perhaps two or three companies competing in the same territory, and in many cases a like number of railroad companies, and possibly an air line, to say nothing of thousands of automobiles which perhaps take more passengers from commercial carriers than competing carriers take from each other.

### Reasons for Advertising

Therefore the smart operator today does believe in advertising—not spasmodic nor haphazard, but advertising placed consistently in advantageous places. The Greyhound Lines is not the first company to do advertising in a systematic manner. The Pickwick Stages on the west coast was perhaps the first to appreciate the value of good advertising, and used it effectively. The

Greyhound Lines is, however, the first motor coach line to launch an advertising campaign truly national in its scope. Having devoted the first two years of its existence to expansion and development, this company did but little in the way of creating public interest through publicity and advertising. Finally, with a highway transportation system larger than any yet seen in the country, it became apparent that the public, largely ignorant of the tremendous growth in this field, must be told of the amazing advances which had taken place almost overnight.

The first efforts were rather weak and, because of their lack of careful planning and continuity, lacked conviction. It was decided that advertising plans for the coming year (1929) would be made far enough in advance to allow a thorough study of the situation to determine through which means the motor coach passenger market might best be reached. Where to turn for our starting point was the problem. To jump from practically no advertising to a national campaign, was food for considerable study.

The nearest comparison that might be drawn existed between the coach lines and the railroads. Each was engaged in serving the public as a transportation medium between cities; our market therefore was fundamentally the same. But here the analogy ended. The advantages of travel in rubber tired motor coaches over concrete highways and travel in steelwheeled trains over steel rails are distinctly different. Nevertheless the ground work was based on the fifty-odd years of the railroads' experience.

A study of the advertising expenditures of a number of the outstanding railroads over the past few years made it possible to arrive at a fair percentage of the estimated gross revenue which should be set aside as the advertising budget for the year. From this point forward it was necessary to work out our own problems and establish a precedent in 1929 for our future in advertising. The next problem which needed a decision was how and where to spend this money with the greatest effect. We determined

### DOWN EAST by BUS



Go east via highways rich in history, romance, beauty. Travel the high passes of the Alleghenies and the Blue Ridge to New York, Baltimore, Washington, Philadelphia. Learn the amazing fare reductions you make on these comfortable, luxurious motor buses. Take the Greyhound and "Yellowway" Lines. Tickets and information at depots.

P. & O. UNION MOTOR COACH TERMINAL, 2133 E. 9th St., Phone Main 8727; Buckeye Stages Depot, 1451 W. 3rd St., Phone Main 6873; Stein's Lunch, 1374 Glen Ave., Phone Lakewood 7070; East End Bus Terminal, 10516 Euclid Ave., Phone Cedar 3785.

PITTSBURGH . .	\$ 3.25
PHILADELPHIA	10.50
NEW YORK . . .	12.50
BALTIMORE . .	9.00
WASHINGTON .	10.25
GETTYSBURG .	8.25
ATLANTIC CITY	11.75
ATLANTA . . . .	19.50
JACKSONVILLE	26.85

Greyhound Vans for Long Distance Household Moving. Low rates, dependable service. Write Greyhound Vans, 2133 E. 9th St., or Ph. Main 8298.

**GREYHOUND** Lines **AND** **"YELLOWWAY"** Stages

Typical of the Copy Run in Daily Newspapers



first to set out the cardinal advantages of motor coach travel, taking into account any points which constituted public resistance.

### Emphasizing Advantages of Motor Coach Travel

Economy was selected as without a doubt the outstanding attraction—a feature which the general public was hardly aware of and which afforded the greatest appeal to the majority of people.

Safety appeared second on the list, and must be stressed particularly because the motor coach industry, being new, has in case of accidents received more than its share of unfavorable publicity in press articles. While in most cases the accounts of accidents have been reasonably accurate, the impression conveyed to the public has been deplorably exaggerated.

Responsibility, closely akin to safety, must be brought to the attention of a public which has in past years been somewhat justified in its belief that motor coach companies were not altogether sound. The fact that behind Greyhound Lines are men of wide reputation in the financial and business worlds and an organization

of great strength, should be told to the general public.

Convenience also was given a prominent place, as there is no system of transportation so flexible as motor coach service, and no other commercial carrier which enters the heart of the business districts of cities and will stop almost at the door of the farmer, making travel equally accessible to rural communities. Frequent schedules further strengthen this point, as each coach is singly powered, making from five to twenty departure times practical from densely populated communities.

Comfort, a point which has been considered by many a lacking quality, must be brought forth; for in most cases skepticism has been based on the motor coach of a few years back, with no consideration for the tremendous advances and improvements in coach building and the universal appearance of smooth, concrete highways.

The size of the Greyhound Lines, too, was believed to be of unquestionable importance, and a point which should be carried in some way through all advertising. The fact that one can board a motor coach in New York and travel over one system to any part of the United

States is an argument of which no other system of passenger transportation can boast. That one company can attain such size in the astonishing period of a few years speaks well for its popularity and answers in turn any of the above listed points which might arise as a question in the minds of a traveler unfamiliar with motor coaches.

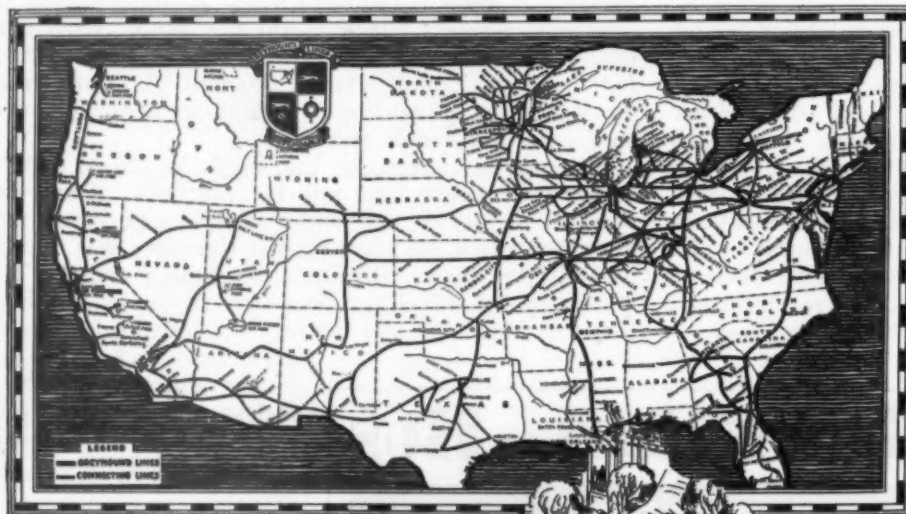
The seventh distinctive advantage of this form of travel is that of the opportunity to appreciate the natural beauty in cities, towns and country. Traveling the open highway, the motor coach rider is brought into intimate relationship with the territory through which he passes. Coach travel offers the same advantages as one's touring car, without the responsibility.

There are numerous other points which might well be stressed in a general way, but the above seven formed the nucleus of our campaign. After consideration of these cardinal features, it was obvious that our prospects lay in no one or two particular fields, but that our market is the American people; any of whom might, if advised of the facts, be logical patrons.

### Newspaper Advertising

It was therefore decided that the backbone of our campaign would consist of the use of media which would enable us to tell our story to the greatest masses

## The travel habits of a nation are changing overnight



### A new, amazing chapter in transportation history...

Public demand has placed on the highways a vast new system of dependable motor bus transportation. A sixth of the nation's people are directly served by the Greyhound Lines. Its coaches travel daily a distance three times the mileage around the world.

#### Low cost transportation

Look to the highways, the main streets, the cross-roads. Over the Alleghenys, across the rolling miles of the midwest, along the Mississippi and the scenic routes to Florida, everywhere you find people riding the Greyhound buses.

Here is the lowest cost overland transportation ever offered. More passengers for each ton of vehicle weight. Fuel measured in gallons rather than in tons.

Here, too, is new travel convenience. Carrying fewer passengers at a time, Greyhound buses run surprisingly often. They offer time saving service to and from a thousand cities and towns.

No wonder, swiftly, the travel habits of the nation are changing.

To motor transportation Greyhound Lines brought nation-wide operation and responsible ownership. A well managed, reliable company watches your comfort and safety.

You travel in modern buses with individual deep-cushioned seats, air brakes and hydraulic shock absorbers. Buses are

tested for safety before the run. At the controls is a seasoned pilot who has passed and must re-pass most rigid tests. Winter and summer, day and night you travel safely, at your ease.

#### Ride the Greyhound Buses

Learn the economy and convenience of Greyhound bus travel. Look into both local service from your city and the delightful new long distance Greyhound trips.

A new booklet, "Motor Bus Transportation," will be sent free. Write for it and for full travel information and rates. Address: Motor Transit Management Company, 1157 S. Wabash Ave., Chicago.



NEW YORK • LOS ANGELES • JACKSONVILLE • CHICAGO • PHILADELPHIA • KANSAS CITY • CLEVELAND • DETROIT • CINCINNATI

First of a Series of Institutional Advertisements Appearing in the Saturday Evening Post

of people. Our advertising appropriation was budgeted accordingly. A given sum was set aside for advertising in local newspapers; in these advertisements would be listed fares to cities located in all parts of the country, thereby covering three things—economy, size, and the continual appearance of the Greyhound name. Intermingled with these ads, other newspaper advertising would be run, drawing in other of our seven cardinal points. The space used would be rather small, 50 to 200 lines run consistently throughout the year from twice a week to daily, depending upon local conditions and the season. This method of reaching the public has proved highly productive of direct results.

The appearance of the Greyhound Lines name on the pages of national periodicals has attracted more attention and without a doubt created more interest than any advertising done by a motor coach company prior to this time. This is exactly what we had hoped for, and accounts in part for our decision to use this type of advertising.

#### National Advertising

There are numerous national periodicals which are excellent media for advertising; all have their merits for certain purposes, and any might be more or less effective from some angle in stimulating coach travel. It was manifestly impossible, however, to carry space in all the magazines which would prove beneficial. What we needed was mass coverage, in publications which would carry with them the prestige needed to elevate an infant industry. The *Saturday Evening Post* we felt would best serve our needs in making our first break into periodical advertising. Old and experienced advertisers have for years conceded this magazine to be an outstanding medium. Its large and wide spread circulation, the strength of age, and large pages fitted our needs perfectly, and logically enough, we turned to this magazine in which to make what, for a motor coach company, might be considered a spectacular debut.

Seven full pages were scheduled to run once each month, alternately with four other full pages in another publication. For the alternate we selected the *American Magazine*. Reasons for choosing the latter were in some degree similar to our reasons for the use of the *Post*, though added to these points was the fact that

## Wherever You're Going you'll Save Money on a GREYHOUND BUS



FROM New York to the Golden Gate, from the Lakes to the Gulf of Mexico, connecting almost all the principal cities, stretch the routes of Greyhound and "Yellowway" Lines—largest, longest, most dependable motor bus system in America.

Wherever you want to go, there are Greyhound buses to take you. With regular and frequent schedules they bring new transportation convenience to a thousand formerly isolated places. Crossing the country over three distinct routes, they touch at almost every vacationland. One-fifth of the people in America live directly along the Greyhound lines.

#### Travel Costs Reduced

All history holds no travel opportunity comparable to that now offered by the Greyhound Buses. Travel costs are less than any other overland transportation known. You go farther on every dollar. Places and trips until now beyond your means become practical. And so, for short trips or transcontinental journeys, millions of people are riding these buses today.



NEW YORK • LOS ANGELES • JACKSONVILLE • CHICAGO • PHILADELPHIA • CLEVELAND • DETROIT • CINCINNATI • BALTIMORE  
WASHINGTON • PITTSBURGH • INDIANAPOLIS • ST. LOUIS • SAN FRANCISCO • DENVER • ATLANTA • NEW ORLEANS



Not only low cost, but new travel luxury is yours when you ride these Greyhounds of the highways. The modern, all-steel coaches are equipped with individual deep-cushioned seats, air brakes and hydraulic shock absorbers. Every comfort and safety device is built in. And at the controls is a driver from Greyhound Lines' own rigorous school—a man of character and integrity who has passed the most rigid physical, mental and experience tests.

To know the full pleasure and romance of travel, go the delightful motor bus way. Make your journeys over the glorious highways. Learn again the thrill of the cross country trail—the zest and exhilaration of motor-ing with none of the responsibilities.

Fares from your city, with complete departure and arrival information, are yours at your local bus depot. For interesting facts on motor bus vacation tours, write for the new booklet, "Circle Trip Suggestions." Address Motor Transit Management Company, 1157 So. Wabash Ave., Chicago.

One of a Series of Four Advertisements Appearing in the American Magazine

the *American* is a monthly publication and presumably enjoys a longer life than does a magazine circulated with greater frequency. Furthermore, the *American* is more distinctly a family magazine, with a somewhat different appeal, and its editorial policy is such that it would harmonize well with the advertising of a business which has met with such spectacular success in a comparatively brief period.

#### Purpose Was to Bring Good Will

When it was first rumored that the Greyhound Lines' advertising plans included the use of these media, there were skeptics whose opinions bordered on severe criticism—"The company is too young"; "The results are uncertain"; "No other motor coach company has ever used this means of increasing its revenue". To these skeptics we could only reply that the purpose was not to bring immediate results in the form of inquiries and



immediate ticket sales, but rather to increase, through institutional copy, good will; to advance the high standards of modern coach operation, and bring the developments which have been taking place before the eyes of an unseeing and therefore unconvinced public; in short, to bring into public view our seven cardinal points and to show that despite our youth, the motor coach industry has, through public demand, been established on a firm, responsible basis, and is a factor of tremendous importance in the field of passenger transportation.

#### Immediate Results Secured

Now, with our 1929 campaign half over, we can already point to the fruits of this national advertising. Not only has it been of great worth to the Greyhound Lines, but to all connected with the industry as well; and, contrary to our most optimistic anticipations, the direct results are daily rolling into our offices in all parts of the country. Never before in motor coach history has there been so marked an increase in patronage, as during the first six months of this year.

As supplementary units of our advertising, we set aside budgets which allowed for the use of direct mail, illustrated and descriptive folders, window displays, posters, schedules and the usual miscellaneous advertising of less importance. To maintain the good will of employees, the advertising budget further provides for the monthly publication of the "Greyhound Limited," a paper of 5,000 circulation which is sent to ticket agents, employees, and a list limited to those allied to the motor coach industry.

Having recognized the need for a magazine carefully edited to meet the requirements of travelers en-route, this company also edits as a part of its advertising program, "The Greyhound Traveler." This magazine, with a quarterly circulation of 75,000 copies, is distributed gratis to motor coach riders and to a restricted mailing list. Included in each issue are several travel stories, fiction, humor, editorials, and news of the latest developments in the motor coach industry. This too has been found an effective instrument in securing the good will of the public.

## Cotton Belt Uses Special Coach in Development Work

INSTEAD of using exhibit cars to illustrate modern methods of farming and dairying, which has been the custom with railroads for many years, the Cotton Belt makes use of an unusually equipped International Model S-26 to transport equipment and make possible the use of loud speakers and motion picture films and slides in presenting programs of instruction and entertainment at country schoolhouses, picnics, fairs, and other public places.

#### Special Aluminum Body

A special body of aluminum, with the interior finished in polished wood and genuine leather, is mounted on the International chassis. Seven passengers are accommodated in comfort. A special power take-off drives a 125-volt direct current generator and stores the electricity in 96 battery cells. A converter turns this electrical energy into 110-volt alternating current, which is used to operate a public address system, with microphone and amplifier, a reproducer of phonograph records, a standard motion picture machine, and to supply lights when needed. Another item of equipment is a 9-foot motion picture screen which is carried about in a copper tube.

A metal grille, which gives the truck the appearance of observation or private railway car, is hinged to form a speaker's platform. Addresses or musical numbers delivered through the microphone, or phonograph records played, are amplified through the horns in sufficient volume to be heard plainly by 5,000 people. There is also a loud speaker for use in halls, churches, schools or other buildings.

The Educational and Entertainment unit was developed by A. C. McKibbin, director of public relations of the St. Louis Southwestern, in St. Louis. It has been placed in the service under the direction of P. T. Cole, agricultural commissioner, whose headquarters are at Tyler, Tex.



This Coach Carries the Name and Message of the Cotton Belt to Many Public Gatherings

# BUSINESS SCIENCE APPLIED

## *to Motor Truck Operation\**

*Necessary to co-ordinate all engineering effort for maximum control and economy—Importance of human element*

By Nathaniel Mallouf

President, Mallouf Haulage and Maintenance Co., Long Island City, N. Y.

ONE of the great factors in speeding up distribution and reducing its costs is the motor truck. Heads of industry too often overlook and neglect this major factor, which contributes so much to a more certain arrival at the ultimate port of profit. These able executives have been led to believe that control of motor truck operation is purely a mechanical problem. They admit its importance, but doubt that the results desired can ever be controlled as they have learned to control the other and older departments of their business.

But it has been demonstrated in many cases that, when considered from a commercial aspect, motor truck operation can be put on the same easily comprehended and well understood basis, and under the same regular supervision, as purchasing or accounting or manufacturing or selling, or any other department in which profitable methods of control have been achieved through years of experience.

Neither the utmost economy nor the great potentialities of the modern motor truck will ever be realized until motor transportation is fully recognized as a separate and distinct business standing on its own feet and guided by a profit-and-loss statement. Industries should organize their motor transportation departments as subsidiary companies or else purchase transportation service on a contract basis from an independent company of competent business specialists in motor transportation.

The definite segregation of costs, by this method, enables the company to obtain information which can be used on a comparative basis in an endeavor to learn the true factors entering into its transportation costs and the relation of one to the other. This method will also place the company in a position in which its own costs can be used in a competitive manner against other methods of transportation, whether under its own control or under the management of contractors who serve it.

Motor truck operation must be modern and completely organized as a business to serve adequately the requirements of modern distribution and thus fill its place as an essential part of the business. In

the field of motor transportation, human engineering is the outstanding requisite for producing maximum man-effort in the interest of economy and service. From the executive head down to the mechanic and the driver there must be co-ordination, each man undertaking the phase of work for which he is a qualified specialist. Organized understanding and appreciation of the customer's problems relative to sales policies and competition are indispensable, particularly in the field of "peddling" deliveries or driver salesmen.

We should not underestimate the important influence that sustained dissemination of educational propaganda plays in bringing about proper control, because physical ownership of equipment alone does not necessarily mean proper control. For instance, it is unanimously conceded that the driver holds the most strategic position in controlling truck costs and service, and frequently he can make or break the public's good will toward the firm which employs him. Therefore, it obviously is necessary that a sustained educational pressure should be directed toward him and other employees with respect to their duties to the company's equipment, to public safety and to customers.

### Adequate Cost-Accounting Necessary

A great aid in spot-lighting the weak points is a cost record system that will tie up with the books of account. Such records need not be intricate or numerous, but they will be useless unless they are studied daily and the information gained thereby utilized by all the responsible individuals. Special clerks should be employed for segregating cost records, and these men must possess a certain amount of knowledge concerning the operations reflected in the figures.

Such a system of cost records must be capable of and must be used for the purpose of retaining the individual identity of each unit and each employee responsible for costs. It should reflect figures in a form that is in effect a photograph of each and every driver and mechanic. Such means stimulate and arouse incentive on the part of all concerned in behalf of economy and result in a smaller number of trucks and of men for a given amount of work.

In keeping with the practice of bringing about



One of the Autocars in the Mallouf Fleet

\* From a paper presented at the summer meeting of the Society of Automotive Engineers at Saranac Lake, N. Y., on June 26.



co-ordination through team-work and a centralization of responsibilities, many large companies and also the railroads utilize a manual prepared by the management. The manual is distributed among the heads of the various departments and other employees, and it explains the functions and duties of all workers and their relations to one another. In this manner, departures from the manual are immediately known and charged against the individual responsible, thus reducing the probability of repetition of the same offense. But such manuals do not take motor transportation into consideration, although such an omission is exceedingly harmful to the business and causes chaotic conditions in the motor truck department.

Motor transportation, as a department or as a business, is entitled to have a complete manual covering all duties and operation methods if the same high degree of skill and knowledge is expected and demanded from the executives and employees as is required of similar workers engaged in the railroad or any other forms of transportation business.

The human element in such an exacting business of service as this cannot possibly be ignored. We all know that there are drivers who operate similar trucks under similar conditions for the same company and whose trucks frequently will run for two and three

trucks which he placed in the service. This in turn brought to light the fact that a condition of almost complete ignorance existed in this company both with regard to actual cost and particularly to the fundamentals of routing and dispatching. The company from then on improved its operation tremendously, and the major part of the work is now being done by hired trucks on a weight basis.

Another company has at least 15 per cent of its equipment idle due to obsolescence, but this equipment is counted in with the working trucks and this total is then used as a divisor for arriving at a general average maintenance cost per truck per year. This company, having branches in various territories, supplied each branch with the number of trucks required for daily use as requested by the branch manager. The maintenance cost of these trucks was charged to the branches at a rate arrived at by the foregoing method. The total operating cost of the trucks in each branch, including this erroneous maintenance charge, was then divided by the total units delivered to determine a unit cost. This unit cost figure is obviously incorrect, but it is complacently accepted by the management of the company.

Such operations as the foregoing are not in accord with good business science, and yet we see on all sides



Fleet of Trucks Operated by Mallouf Haulage and Maintenance Co. for Another Company

years without a major overhaul, as compared with other drivers whose trucks require almost a yearly overhaul. Under such conditions would it not be better to figure on man-mileage cost instead of on truck-mileage cost? The human element in the most important of all, and only under business organization can this human element be directed and controlled.

#### Methods to be Avoided

Some examples of how not to operate a motor transportation division are as follows: The management of a certain company in New York, which operates a fleet of 30 trucks, was elated because the accountants found that the average cost per day per truck for a 5-ton unit was \$16. An outside contractor who bid on this work questioned this cost and made a survey.

It was found that five of the trucks were inoperative because of age and the removal of parts, but that they still were covered with full insurance and had current license plates. This brought the cost per day per truck actually working up to \$19.20. It was also discovered that the average mileage of the working trucks was 20 miles per day, and on still further investigation, that the average number of trips for all the trucks was a trip and a half per day. The contractor, on demonstration, easily averaged over two trips per day for a few

large truck operations being conducted in like manner, although they are subsidiary to the main business which they serve. Engineers could not design motor trucks by any methods comparable with these, and expect the vehicles to give a good account of themselves in service; nor could business men in direct control of their business, particularly if their whole income is derived from truck rentals, manage their affairs in any such manner and have their business survive.

What is the solution? The engineer has applied the science of mechanical engineering and metallurgy to the designing and building of his trucks, and so likewise must the operator of motor trucks apply the science of his profession, business science, to his operations if he ever hopes to reach the pinnacle that it is possible for him to reach. Trucks scientifically designed, scientifically constructed and scientifically operated constitute the solution.

THE WORLD'S REGISTRATION of motor coaches and trucks, taken jointly, increased by 502,060 or more than 11 per cent during 1928 while at the same time the world's registration of private passenger automobiles increased but 7.3 per cent according to figures from the annual census of the Automotive Division of the United States Department of Commerce, published in the July 15 issue of Commerce Reports.

# Are Motor Coach Taxes Too High?

*A discussion of the taxes that common carriers of passengers are paying and of the widely different methods of taxation prevailing*

By L. A. Rossman

[This article is one of a series being published in the Motor Transport Section, on the general subject of motor vehicle regulation and taxation. In the issue of June 22, (page 1523-4), Prof. R. W. Harbeson of St. Lawrence University, suggested certain basic principles which he feels should be embodied in any program of motor vehicle regulation and taxation. In this article, Mr. Rossman, viewing the matter from the standpoint of the motor coach operator, sets forth the results of his extensive study of present motor vehicle taxes, and voices a warning that they are steadily increasing. Our purpose in publishing these articles is to present all sides of a highly controversial question, to the end that out of these discussions some sound conclusions, upon which all can agree, may develop. Naturally, the opinions expressed in these articles are to be considered only those of the writers, which may or may not be in accord with our editorial views. We shall welcome replies to or constructive criticism of the arguments advanced in this article or in other articles in this series.—THE EDITOR.]

**T**HE facts of motor coach taxation show a very large variation in the amounts that are paid in different states. In some states total taxes are as low as \$50 for a 22-passenger coach. In other states the taxes are as high as \$1,250. The average common carrier motor coach pays, in the United States, an average tax of \$512. In 24 of the states, the taxes are below this average. In the other 24 states, the taxes are above the average. In four states the average tax is below \$25; in four others, above \$1,000.

The average taxes on motor coaches are constantly being increased, by the raising of taxes in the states where amounts paid have been low. In the year 1928, the increase on the average was \$100, and in 1929, another increase is being recorded. In practically every state there is agitation for increased taxes, and at nearly every session of the legislatures, in all of the states, bills providing for an increase are proposed.

The average motor coach tax of \$512 is 70 per cent greater than the average tax of \$303 on common carrier trucks. The motor coach tax is more than ten times the average of \$49.80 that the private motor truck pays, and 24 times the \$21.70 that is annually paid by the private passenger car.

## Tax Systems Vary

In the methods and theories of taxation of motor coaches, there is also wide variety. The great difference in amounts paid would indicate such a condition. A survey of the various methods by which the states tax motor coaches shows a dozen different systems. In some states taxes are so much for each vehicle. Other

**"The motor coach industry itself should recognize its responsibility in opposing unfair taxation. It represents tens of millions of people who depend upon the motor coach for convenient, safe and economical transportation. The industry owes it to the public to face the tax problem frankly and fairly . . . By constantly presenting accurate facts about the problem, there is hope of constructive results. Without considering carefully such facts, the problem will become all the more confused and acute."**

states assess each coach on its passenger capacity. In other states there is a tax for each coach mile or passenger mile operated. The gross weight is the basis of taxation in many states, and in other states a license fee at a certain percentage of value exists. In still another state the horsepower of a motor coach is taxed. Some motor coach operators pay a percentage of gross earnings for taxes. In all states where the gasoline tax exists, that tax is also paid by motor carrier operators.

In the 44 states where the gasoline tax exists motor coaches

are taxed by at least two different methods and most of the states combine three and four and up to a half dozen methods of taxation, including the gasoline tax. In but one state are motor coaches taxed on the same basis as other motor vehicles.

There are several reasons for the variety of methods in taxation of motor coaches. In the taxation of general property, of real estate or chattels, there is some precedent for taxation. The methods generally evolved for this type of taxation are those which have grown up through centuries of government. When motor vehicles came into being, the problem of their taxation was an entirely new one. Motor vehicles have little or nothing in common with horses, with land or stock in trade. Consequently the various states developed varying methods of taxation.

When the motor coach came in, there was still further opportunity for variation. Not only was the motor coach easily subject to taxes imposed upon other vehicles, but it presented an easy opportunity for the application of other theories of taxation. It was easy to justify special taxation on the basis of weight, capacity, mileage or value. Consequently there has grown up a large number of theories and an equally large number of methods. Each year sees, not simplification, but further complexity. These complexities and burdens become all the more important or aggravating as modern motor coach operations extend from state to state.

## Motor Coach Taxes Increasing

There has also been in evidence a consistent desire to increase motor carrier taxes. Theories of taxation are constantly changing. Where once it was believed that taxes should be imposed only in some fair proportion to meet the expenses of government, now taxes are increased to curb development. Some interests en-



gaged in transportation have desired, and even openly encouraged, increased taxes on motor coaches because it was believed that these taxes would impede the development of competition. In the case of motor coaches, some have advanced the theory that taxes should be high so that they might constitute a payment for the use of the public highways. In still other cases the demand for public money, especially for road construction, has been very large, and the public has seen an opportunity of collecting money from the motor coach industry.

The railroads, the public utilities, have all experienced this same desire of the public for money. It is not unnatural that motor coach transportation, as a public utility which uses the public highways, should be singled out for taxation which has proceeded beyond the bounds of both reason and justice.

Taxes seek the highest levels. It is believed that this is a fundamental. If one taxing district devises a new method of high taxation, another district adopts it. If one state adopts a method of taxation on motor coaches, another state adopts the same method. If a utility is taxed at a certain rate in one place, other places having lower standards of taxation raise their taxes to that level. Very seldom are taxes lowered to meet standards. The rule is to raise them. This is especially true at this time when governmental expenditures have reached high totals and normal taxation methods do not produce sufficient revenue for all proposed activities.

It may be said that such a theory is false. There is, of course, no reason why, if the railroads are heavily taxed or over-taxed, motor coach transportation should pay as much. There is no reason why, when one state adopts excessive and unusual methods, another state should adopt them.

#### How Much Should Taxes Be?

Such conditions lead naturally to the basic question: How much should taxes be? That question cannot be answered definitely. It is interesting to note what taxes are on the basis of quite a definite standard of comparison.

The relation of state and local taxes to the gross volume of business transacted is doubtless the clearest and best standard of tax comparison which could be established. Such figures are available from a compilation of federal income tax returns. All trade and industry in the United States pays 1.5 per cent of its gross returns for state and local taxes. The mining and quarrying industry pays 2.4 per cent. The manufacturing industries of the United States, including all lines, pay less than one percent. Those engaged in agriculture pay approximately 2.5 per cent.

Transportation and other public utilities come in for the highest tax burden. Four and five-tenths per cent of their gross revenues is paid to meet state and local taxes.

The motor coach industry is today paying approximately as much on the average as is paid by transportation and other public utilities. The average figure of \$512 as the tax for each motor coach doubtless makes up between 4 and 5 per cent of the earnings of that coach. It must be remembered, however, that this average includes the figures of 24 states which levy below it. In the other 24 states the percentage is higher, and it is doubtless a fact that in some states taxes take from 8 to 10 per cent of the total motor coach revenue.

The motor coach industry thus has a case which it may present to the public. It is taxed through a large variety of methods. Its taxes are a large proportion of

its income. In attempting to rectify that condition, the industry should be on the offensive rather than in a defensive position. The public should be informed of the facts and then presented with the essential arguments. Three or four of the elements which might be considered follow.

The public should be asked to understand that increased motor coach taxes will increase motor coach fares. A certain reasonable amount of taxes may be absorbed in the general course of the transportation business. When taxes go above such a point, they must be passed directly to the patron. Where such a point begins is somewhat a matter of individual circumstances. To add to taxes already high will doubtless tend to cut down the service in places where the margin between income and cost is the smallest. In such places motor bus transportation is particularly useful.

Motor coach transportation is still in its formative period. It is still extremely sensitive to any adverse elements of regulation or taxation. As an industry it has no reserve of capital upon which to draw, no great background of experience upon which it may forecast the future. Adverse factors which affect motor coach transportation must necessarily be passed immediately to those who use the coaches.

A basis of high and discriminatory taxation has been the argument that motor coaches wear out the public highways. There is no doubt that the highways have been wearing out. This argument, however, might be quite easily nullified by a statement of the facts.

There are 24 million privately-owned automobiles and trucks in the United States. There are 44,000 common carrier motor coaches. The privately owned automobile, that carrier which has reduced the revenues of commercial transportation throughout the nation, is the factor which makes necessary the construction and maintenance of public highways.

It may also be demonstrated that a modern motor coach works no hardship upon well constructed highways; that is, highways which are built to withstand the burden of heavy traffic. Increased taxes are not the proper remedy for either real or imaginary damages to public roads. The real damages may be eliminated by proper regulation, by keeping heavy vehicles off the highways at periods of the year in which they will do damage, or by requiring a proper relationship between the weight of the vehicle and the size of its tires.

#### Extend Benefits of Highways

At the basis of most agitation for higher motor coaches taxes is the argument that motor coaches utilize the public highways and, consequently, should be taxed for that privilege. It is true, of course, that the coaches do travel upon the public highways. But there is another side to the question; that is, the motor coaches give the use of the public highways to those who would otherwise get no benefit from them. The highways are owned by all of the people. They are a great public possession. Those who travel on them by automobile or transport over them by truck now receive the direct benefit from them. Without the motor coach many people would be denied the convenience, the pleasure and the profit which the use of the highways might bring.

Motor coach transportation should not be penalized. It is a public utility which renders a service which the public wants. As motor coach transportation has profited, those profits have been returned to make a more useful, and a more stable service.

(Continued on page 309)

# Cost of Motor Coach Operation Analyzed

*National Motor Bus Division, American Automobile Association, releases study of 1928 motor coach revenues and expenses covering 100 companies*

THE National Motor Bus Division of the American Automobile Association has issued its analysis of motor coach operating revenues and expenses for 1928, compiled by Warner Tufts, which presents complete statistics covering 100 motor coach operating companies in the United States. Of the 100 companies represented, 50 are engaged in inter-city operation, and 50 in intra-city operation. In the aggregate, these companies own 6,414 motor coaches, or 13.7 per cent of the common carrier motor coaches in the United States.

The division presents these annual studies of operating costs for the purpose of enabling individual operators to make comparisons of their own records with these averages.

The tables presented herewith cover only the inter-city companies, since these are of primary interest to the steam railways. The pamphlet published by the division, however, gives statistics also for the city companies. The tables show comparative averages of certain group-

ings, dividing the companies according to their size, and also according to their success or lack of success.

The division analyzes the operating costs on the basis of the "cost per 100 seat miles," in addition to the cost per motor coach mile, feeling that the latter by itself is inadequate. One of the reasons for the inclusion of the cost per 100 seat miles is that any measure of efficiency must depend on the comparison between seat mile capacity and passenger mile performance.

The classifications included in the table are as follows:

I—Companies with gross revenue below \$100,000.

II—Companies with gross revenue between \$100,000 and \$250,000.

III—Companies with gross revenue between \$250,000 and \$1,000,000.

IV—Companies with gross revenue above \$1,000,000.

a—Companies showing a profit.

b—Companies showing a loss.

c—All companies in group.

## Motor Coach Operating Cost Statistics, 1928

Classification	Repair Materials and Supplies for Buses				Repair Materials and Supplies for Other Property (except Tires)				Salaries and Wages to Bus Repair				Salaries and Wages to Other Repair (except Tires)					
	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)		
INTERCITY COMPANIES																		
I	a	39,121	7.193	1.201	6.481	861	.158	.026	.143	32,202	5.921	.989	5.335	117	.022	.004	.019	
	b	33,411	8.376	1.787	9.485	5,727	1.436	.306	1.626	17,389	4.360	.930	4.936	3,980	.998	.212	1.130	
	c	72,532	7.694	1.415	7.577	6,588	.699	.128	.688	49,591	5.260	.967	5.180	4,097	.435	.080	.428	
II	a	77,692	10.211	1.769	9.570	2,391	.314	.054	.295	60,530	7.955	1.379	7.456	2,612	.343	.059	.322	
	b	79,625	10.469	3.163	16.698	2,807	.369	.112	.589	40,965	5.386	1.630	8.591	3,165	.416	.126	.664	
	c	157,317	10.340	2.279	12.165	5,198	.342	.075	.402	101,495	6.671	1.470	7.848	5,777	.380	.083	.447	
III	a	531,533	9.737	2.168	9.382	43,710	.801	.178	.772	418,946	7.675	1.709	7.395	59,743	1.094	.244	1.055	
	b	140,621	12.434	3.357	13.306	18,954	1.676	.453	1.794	133,804	11.831	3.194	12.661	26,321	2.327	.628	2.491	
	c	672,154	10.200	2.342	10.020	62,664	.951	.218	.934	552,750	8.388	1.926	8.240	80,064	1.306	.300	1.283	
IV	a	906,736	8.955	2.358	8.783	121,699	1.202	.317	1.179	892,948	8.819	2.322	8.650	184,933	1.826	.481	1.791	
	b	161,845	6.852	1.798	6.959	2,369	.100	.026	.102	151,917	6.432	1.688	6.532	19,783	.838	.220	.851	
	c	1,068,581	8.557	2.252	8.466	124,068	.994	.261	.983	1,044,865	8.367	2.202	8.279	204,716	1.639	.431	1.622	
Classification	Tires and Tubes (Including Repair) for Buses				Tires and Tubes (Including Repair) for Other Equipment				Depreciation Allowed on Buses				Depreciation Allowed on Other Property					
	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)	Total (Dollars)	Average Rate Used (Per Cent)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)	
INTERCITY COMPANIES																		
I	a	33,658	6.188	1.033	5.576	14	.003	.000	.002	103,327	25.752	18.998	3.172	17.117	2,694	.495	.083	.446
	b	24,791	6.215	1.326	7.038	.....	.....	.....	.....	57,529	20.567	14.423	3.077	16.332	4,320	1.083	.231	1.226
	c	58,449	6.200	1.140	6.106	14	.001	.000	.001	160,856	23.622	17.062	3.137	16.804	7,014	.744	.137	.733
II	a	49,048	6.446	1.117	6.042	1,241	.163	.028	.153	109,837	20.792	14.435	2.502	13.530	4,583	.602	.104	.565
	b	42,664	5.609	1.697	8.947	1,166	.153	.046	.245	158,587	23.079	20.851	6.309	33.256	6,747	.887	.268	1.415
	c	91,712	6.028	1.328	7.092	2,407	.158	.035	.186	268,424	22.085	17.642	3.888	20.757	11,330	.745	.164	.876
III	a	307,455	5.632	1.254	5.427	8,759	.160	.036	.155	861,320	19.870	15.779	3.514	15.204	48,365	.886	.197	.854
	b	61,260	5.417	1.463	5.797	2,368	.209	.057	.224	85,689	23.107	7.577	2.046	8.108	7,159	.833	.171	.677
	c	368,715	5.595	1.285	5.497	11,127	.169	.039	.166	647,009	20.124	14.371	3.299	14.118	55,524	.843	.193	.828
IV	a	550,238	5.434	1.431	5.330	34,212	.338	.089	.331	1,225,534	21.131	12.103	3.187	11.871	87,155	.861	.227	.844
	b	117,395	4.970	1.304	5.048	959	.041	.011	.041	272,345	18.398	11.530	3.026	11.711	57,706	2.443	.641	2.461
	c	667,633	5.346	1.407	5.290	35,171	.282	.074	.279	1,497,879	20.575	11.905	3.157	11.868	144,861	1.160	.305	1.148



Classification	TOTAL MAINTENANCE				Gasoline Used in Buses				Gasoline Used in Other Equipment				Lubricants Used in Buses			
	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)
INTERCITY COMPANIES																
I a	211,994	38.978	6.508	35.119	72,557	13.341	2.227	12.020	12	.002	.000	.002	12,739	2.342	.391	2.110
b	147,147	36.891	7.870	41.773	42,643	10.691	2.281	12.106	.....	.....	.....	.....	9,081	2.276	.486	2.578
c	359,141	38.095	7.004	37.517	115,200	12.220	2.247	12.034	12	.001	.000	.001	21,820	2.314	.426	2.279
II a	307,934	40.471	7.013	37.931	89,212	11.725	2.032	10.989	1,832	.241	.042	.226	20,322	2.671	.463	2.503
b	335,726	44.140	13.356	70.406	74,682	9.879	2.971	15.662	979	.129	.039	.205	15,857	2.085	.631	3.325
c	643,660	42.305	9.323	49.773	163,894	10.772	2.374	12.674	2,811	.185	.041	.217	36,179	2.378	.524	2.798
III a	2,279,831	41.764	9.300	40.243	528,966	9.691	2.158	9.337	10,033	.184	.041	.177	102,563	1.879	.418	1.810
b	476,176	42.104	11.368	45.059	84,420	7.465	2.015	7.988	1,603	.142	.038	.152	13,202	1.167	.315	1.249
c	2,756,007	41.823	9.602	41.087	613,406	9.308	2.137	9.145	11,636	.177	.041	.173	115,765	1.757	.403	1.726
IV a	4,003,455	39.537	10.413	38.780	1,019,939	10.073	2.653	9.880	33,425	.330	.087	.324	195,780	1.933	.509	1.896
b	784,319	33.205	8.715	33.726	216,197	9.153	2.402	9.296	1,957	.083	.022	.084	33,864	1.434	.376	1.456
c	4,787,774	38.340	10.090	37.934	1,236,136	9.899	2.605	9.794	35,382	.283	.075	.280	229,644	1.839	.484	1.819

Classification	Lubricants Used in Other Equipment				Wages of General Garage Employees				Miscellaneous Operation Expenses				TOTAL OPERATION			
	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)
INTERCITY COMPANIES																
I a	6	.001	.000	.001	4,585	.843	.141	.760	.....	.....	.....	.....	89,899	16.529	2.760	14.892
b	.....	.....	.....	.....	7,972	1.999	.426	2.263	7,414	1.859	.397	2.105	67,110	16.825	3.589	19.051
c	6	.001	.000	.001	12,557	1.332	.245	1.312	7,414	.786	.145	.774	157,009	16.654	3.062	16.402
II a	524	.069	.012	.064	15,854	2.084	.361	1.953	.....	.....	.....	.....	127,744	16.789	2.909	15.735
b	191	.025	.008	.040	16,066	2.112	.639	3.369	2,886	.379	.115	.605	110,661	14.549	4.402	23.207
c	715	.047	.010	.055	31,920	2.098	.462	2.468	2,886	.190	.042	.223	238,405	15.669	3.453	18.436
III a	2,371	.043	.010	.042	113,716	2.083	.464	2.007	33,365	.611	.136	.589	791,034	14.491	3.227	13.963
b	285	.025	.007	.027	16,510	1.460	.394	1.562	.....	.....	.....	.....	116,020	10.239	2.770	10.978
c	2,656	.040	.009	.040	130,226	1.976	.454	1.941	33,365	.506	.116	.497	907,054	13.765	3.160	13.522
IV a	7,492	.074	.019	.073	350,808	3.464	.912	3.398	185,348	1.835	.483	1.800	1,793,282	17.710	4.664	17.371
b	265	.011	.003	.011	56,196	2.379	.624	2.416	27,211	1.152	.302	1.170	335,690	14.212	3.730	14.435
c	7,747	.062	.016	.061	407,004	3.259	.858	3.225	213,059	1.706	.449	1.688	2,128,972	17.048	4.487	16.868

Classification	Wages of Drivers and Conductors				Superintendence and Other Transportation Wages				Miscellaneous Transportation Expenses				TOTAL TRANSPORTATION			
	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)
INTERCITY COMPANIES																
I a	105,600	19.416	3.242	17.494	9,627	1.770	.296	1.595	.....	.....	.....	.....	115,227	21.186	3.537	19.089
b	74,108	18.579	3.964	21.038	9,091	2.279	.486	2.581	1,441	.361	.077	.409	84,640	21.220	4.527	24.028
c	179,708	19.062	3.503	18.773	18,718	1.985	.365	1.955	1,441	.153	.028	.151	199,867	21.200	3.895	20.879
II a	142,180	18.697	3.238	17.515	18,683	2.455	.426	2.301	209	.028	.005	.026	161,081	21.170	3.669	19.842
b	118,951	15.630	4.732	24.946	16,952	2.229	.674	3.555	44,269	5.820	1.761	9.284	180,172	23.688	7.168	37.784
c	261,140	17.164	3.782	20.194	35,635	2.342	.516	2.756	44,478	2.923	.644	3.439	341,253	22.429	4.943	26.592
III a	853,068	15.627	3.480	15.058	269,974	4.946	1.101	4.765	43,489	.797	.177	.768	1,166,531	21.370	4.759	20.591
b	176,987	15.649	4.225	16.748	15,275	1.350	.365	1.445	11,858	1.049	.283	1.122	204,120	18.049	4.873	19.315
c	1,030,055	15.631	3.589	15.356	285,249	4.329	.994	4.252	55,347	.840	.193	.825	1,370,651	20.800	4.775	20.434
IV a	1,334,639	13.181	3.471	12.928	487,691	4.816	1.268	4.724	184,367	1.821	.480	1.786	2,006,697	19.818	5.219	19.439
b	483,864	20.485	5.376	20.806	171,474	7.260	1.905	7.373	.....	.....	.....	.....	655,338	27.745	7.282	28.179
c	1,818,503	14.562	3.833	14.408	659,165	5.278	1.389	5.223	184,367	1.476	.372	1.461	2,662,035	21.317	5.371	21.092

Classification	Advertising and Promotional Printing				Superintendence and Other Traffic Promotion				TOTAL TRAFFIC PROMOTION				Administrative and Office Salaries			
	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)
INTERCITY COMPANIES																
I a	9,472	1.742	.291	1.569	736	.135	.023	.122	10,208	1.877	.313	1.691	43,348	7.970	1.331	7.181
b	3,023	.758	.162	.858	727	.182	.039	.206	3,750	.940	.201	1.065	17,915	4.491	.958	5.086
c	12,495	1.325	.244	1.305	1,463	.155	.029	.153	13,958	1.481	.272	1.458	61,263	6.498	1.195	6.400
II a	6,863	.902	.156	.845	187	.025	.004	.023	7,050	.927	.161	.868	51,027	6.706	1.162	6.285
b	2,514	.331	.100	.527	615	.081	.024	.129	3,129	.411	.124	.656	41,218	5.419	1.640	8.644
c	9,377	.616	.136	.725	802	.053	.012	.062	10,179	.669	.147	.787	92,245	6.063	1.336	7.133
III a	137,937	2.527	.563	2.435	32,267	.591	.132	.570	170,204	3.118	.694	3.004	327,418	5.998	1.336	5.779
b	17,613	1.557	.420	1.667	5	.000	.000	.000	17,618	1.558	.421	1.667	32,031	4.601	1.242	4.923
c	155,550	2.360	.542	2.319	32,272	.490	.112	.481	187,822	2.850	.654	2.800	379,449	5.758	1.322	5.657
IV a	301,208	2.975	.783	2.918	100,586	.993	.262	.974	401,794	3.968	1.045	3.892	527,565	5.210	1.372	5.110
b	42,068	1.781	.467	1.809	20,094	.850	.223	.864	62,152	2.631	.691	2.673	168,551	7.136	1.873	7.248
c	343,276	2.749	.693	2.720	120,670	.966	.243	.956	463,946	3.715	.936	3.676	696,116	5.574	1.404	5.515

Classification	Office Supplies				Insurance Against Claims (Except Employee Liability Insurance)				Property Insurance				All Employee Insurance			
	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)
INTERCITY COMPANIES																
I a	3,663	.673	.112	.607	32,274	5.934	.991	5.347	4,018	.739	.123	.666	3,460	.636	.106	.573
b	2,222	.557	.119	.631	30,479	7.641	1.630	8.653	18,939	4.748	1.013	5.376	3,973	.996	.212	1.128
c	5,885	.624	.115	.615	62,753	6.656	1.224	6.555	22,957	2.435	.448	2.393	7,433	.788	.145	.776
II a	8,270	1.087	.188	1.019	22,183	2.915	.505	2.732	5,963	.784	.136	.735	2,485	.327	.057	.306
b	8,244	1.084	.328	1.729	33,964	4.465	1.351	7.123	10,614	1.395	.422	2.226	2,460	.323	.098	.516
c	16,514	1.085	.239	1.277	56,147	3.690	.813	4.342	16,577	1.090	.240	1.282	4,945	.325	.072	.382
III a	99,210	1.817	.405	1.751	232,758	4.264	.949	4.109	49,091	.899	.200	.867	11,725	.215	.048	.207
b	11,574	1.050	.283	1.124	90,761	8.025	2.167	8.588	5,244	.464	.125	.496	5,062	.448	.121	.479
c	111,084	1.686	.357	1.656	323,519	4.909	1.127	4.823	54,335	.825	.189	.810	16,787	.255	.058	.250
IV a	154,422	1.525	.402	1.496	289,084	2.855	.752	2.800	209,838	2.072	.546	2.033	12,871	.127	.033	.125
b	25,199	1.067	.280	1.084	135,089	5.719	1.501	5.809	40,716	1.724	.452	1.751	6,416	.272	.071	.276
c	179,621	1.438	.379	1.423	424,173	3.397	.894	3.361	250,554	2.006	.528	1.985	19,287	.154	.041	.153

	Miscellaneous General Expenses				TOTAL GENERAL				Rent of Buses				Rent of Other Property			
	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)
INTERCITY COMPANIES																
I a	3,911	.719	.120	.648	90,674	16.672	2.783	15.021	3,970	.730	.122	.658	21,909	4.028	.673	3.630
b	3,619	.907	.194	1.027	77,147	19.341	4.126	21.901	14,948	3.748	.799	4.244	4,131	1.035	.221	1.173
c	7,530	.799	.147	.787	167,821	17.801	3.273	17.531	18,918	2.007	.399	1.976	26,040	2.762	.508	2.720
II a	17,957	2.360	.409	2.212	107,885	14.179	2.457	13.289	27,199	3.575	.619	3.350	21,992	2.890	.501	2.709
b	6,770	.890	.269	1.420	103,270	13.578	4.108	21.657	870	.114	.035	.182	26,762	3.519	1.065	5.612
c	24,727	1.625	.358	1.912	211,155	13.878	3.058	16.328	28,069	1.845	.407	2.171	48,754	3.204	.706	3.770
III a	140,256	2.569	.572	2.476	860,458	15.763	3.510	15.189	68,969	1.263	.281	1.217	121,769	2.231	.497	2.149
b	29,521	2.610	.705	2.793	194,493	17.197	4.643	18.404	76,306	6.747	1.822	7.221	46,214	4.086	1.103	4.373
c	169,777	2.576	.592	2.531	1,054,951	16.009	3.675	15.727	145,275	2.205	.506	2.166	167,983	2.549	.585	2.501
IV a	558,800	5.519	1.453	5.413	1,752,580	17.308	4.558	16.977	2,078	.021	.005	.020	165,912	1.639	.432	1.607
b	34,393	1.456	.382	1.479	410,364	17.373	4.560	17.646	140	.006	.002	.006	114,013	4.827	1.267	4.903
c	593,193	4.750	1.250	4.670	2,162,944	17.320	4.559	17.132	2,218	.018	.005	.018	279,925	2.242	.590	2.218

Classification	TOTAL RENT				TOTAL OPERATING EXPENSES (Before Taxes and Fees)			
	Total (Dollars)	Per Cent of Operating Expense	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)	Total (Dollars)	Per Cent of Operating Revenue (Operating Ratio)	Per Bus Mile (Cents)	Per 100 Seat Miles (Cents)
INTERCITY COMPANIES								
I a	25,879	4.758	.794	4.287	543,881	83.340	16.696	90.101
b	19,079	4.783	1.020	5.416	398,873	113.461	21.333	113.231
c	44,958	4.769	.877	4.696	942,754	93.886	18.387	98.483
II a	49,191	6.465	1.120	6.059	760,885	76.374	17.330	93.725
b	27,632	3.633	1.099	5.795	760,690	109.082	30.258	159.506
c	76,823	5.049	1.113	5.941	1,521,475	89.841	22.037	117.654
III a	190,738	3.494	.778	3.367	5,458,796	84.557	22.268	96.357
b	122,520	10.833	2.925	11.594	1,130,947	110.247	27.000	107.017
c	313,258	4.754	1.091	4.670	6,589,743	83.079	22.959	98.240
IV a	167,990	1.659	.437	1.627	10,125,798	84.140	26.336	98.086
b	114,153	4.833	1.268	4.909	2,392,016	95.893	26.245	101.566
c	282,143	2.239	.595	2.235	12,487,814	80.137	26.319	98.942

## Are Motor Coach Taxes Too High?

(Continued from page 306)

The motor coach industry itself should recognize its responsibility in opposing unfair taxation. It represents tens of millions of people who depend upon the motor coach for convenient, safe and economical transportation. The industry owes it to the public to face the tax problem frankly and fairly. It should not seek to avoid its fair obligations to the government under which it

exists. Its responsibility consists in clarifying in the public mind the facts and theories of taxation. In those states where taxes are reasonable, the public should be informed that such a policy is to its own interest. In states where the taxes are high and excessive, the public should be informed that such a policy is not in the public interest. By constantly presenting accurate facts about the problem there is hope of constructive results. Without considering carefully such facts, the problem of taxation will become all the more confused and acute.



## New Equipment

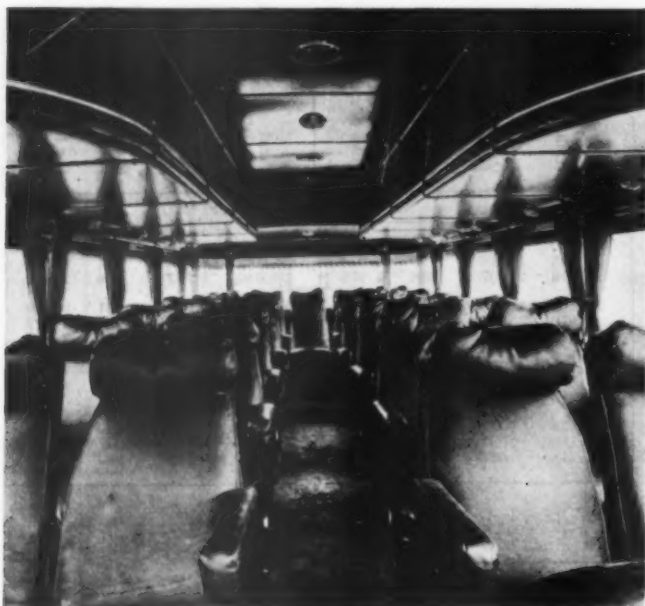
### Studebaker Model 111 Coach

A 220-INCH motor coach chassis powered by a 115 h.p. straight eight motor and designed to accommodate a 25-passenger parlor car type of body has been announced by the Studebaker Corporation of America, South Bend, Ind. It is capable of a maximum weight allowance for the chassis, body and load of 15,070 lb.

Among the outstanding features of this new unit

has, in addition to the features already mentioned, the latest refinements for passenger comfort. The chassis features rear dual wheels, rear springs 3 in. wide, a heavier and stronger frame with three tubular and five pressed steel cross members and 34 in. by 7 in. ply high pressure Firestone tires as standard equipment.

The engine of straight eight design of the L-head type, with a four point suspension mounting, has a piston displacement of 337 cu. in., a compression ratio of



Interior View Showing the Wide Aisle, the Deeply Upholstered Seats with Spring Padded Backs and Headrests

are; four forward speeds; Gruss air springs in front; an inside luggage rack supplemented by an exterior roof rack at the rear; adjustable driver's seat; double cushion chairs with head rests and abundant headroom.

Intended primarily for intercity operation, the body

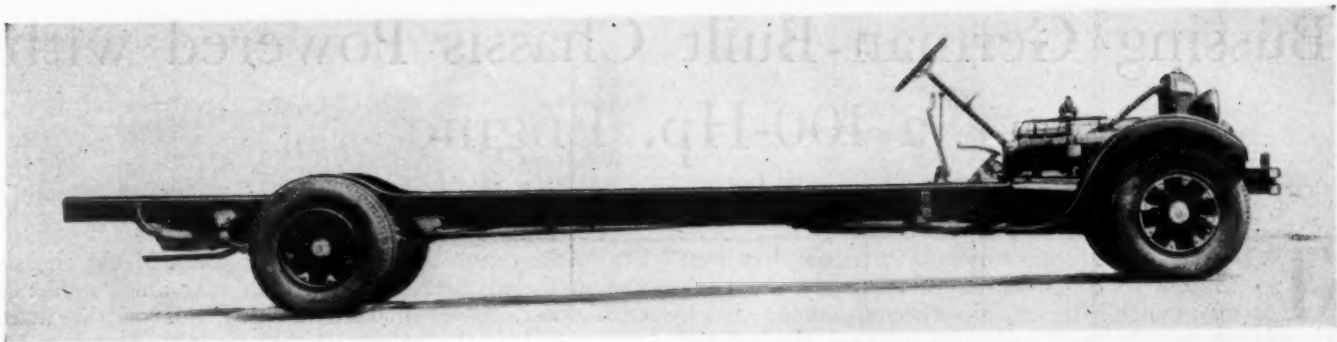
#### Principal Dimensions of the Model 111 Studebaker Motor Coach

Wheelbase .....	220 in.
Dash to rear of frame .....	248½ in.
Seating capacity .....	25 passengers and driver
Body allowance .....	4,900 lb.
Chassis weight complete .....	6,200 lb.
Frame .....	8½ in. deep, 3½ in. flange, ¼ in. thick
Tubular cross members .....	Three
Pressed steel cross members .....	Five
Turning radius .....	
Right .....	34 ft., 11 in.
Left .....	38 ft., 8½ in.
Road clearance .....	
Front (34 in. x 7 in. tires) .....	10½ in.
Rear (34 in. x 7 in. dual tires) .....	8½ in.
Tread: .....	
Front .....	63 in.
Rear (dual tires) .....	64 in.
Outside diameter smallest turning circle .....	70 ft.
Spring center distance .....	
Front .....	27½ in.
Rear .....	39¼ in.
Body length—dash to rear .....	262 in.
Over-all length of vehicle front bumper to rear of body .....	346 in.
Over-all height .....	103 in.
Over-all width— .....	
Outside .....	96 in.
Inside .....	87½ in.
Headroom over aisle .....	74 in.
Width of doors .....	34½ in.
Width of windows .....	30¾ in.
Seat centers .....	33¾ in.
Seat width (double units) .....	25 in.
Aisle width .....	1½ in.

5.15 to 1 and a maximum torque output at 2,000 r.p.m. A mechanically driven fuel pump feeds the carburetor from the 30 gal. capacity gasoline tank which is mounted under the frame at the rear of the chassis. The carburetor is of the duplex type with the lighting



Side View of the 25 Passenger Studebaker Parlor Car Motor Coach



The Wheelbase of the Studebaker Model 111 is 220 In.

being furnished by a high tension battery ignition 12-volt system.

The clutch is of the improved double-disc dry plate, type, 11 in. in diameter. The transmission is in unit with the engine with selective sliding four speeds forwards and one reverse. The standard ratios are in first, 4:8; second, 3:0; third, 2:0; fourth, direct; reverse 6:5. Provision is made for standard S. A. E. power or pump take-off.

A drive shaft of three pieces is used. It is supported at the center by two self-aligning double roll ball bearings. All sections are tubular and of sufficient diameter to withstand all torque and whipping stresses. A slip joint in the rear section allows for the axle motion. The drive is practically straight line under load.

The front axle is drop-forged of the reverse Elliott type. The rear axle is of the semi-floating type designed for heavy duty work with chrome-molybdenum shafts. The housing of malleable iron is exceptionally strong.

The service brake is of the mechanical internal expanding, self-energizing four-wheel type with oversized drums 17¼ in. by 3 in. The Westinghouse vacuum booster reduces pedal pressure two-thirds. There is a total braking area of 535 sq. in. which with the greater braking power on the rear wheels practically eliminates all possibilities of skidding. The parking brake is on the drive shaft and employs a circular ventilated disc 14 in. in diameter.

The front and rear springs of the semi-elliptic type are of Studebaker design and manufacture. The front

springs are 38 in. by 2½ in. with 14 leaves. The rear springs are 56¾ in. by 3 in. with 14 leaves. The front wheel tread is 63 in. while the rear wheel tread measured midway between the dual wheels is 64 in.

The cam and lever type of steering gear having a reduction of 18 to 1 is used. This means that three full turns of the steering wheel are necessary to cramp the wheel from full right to full left position. The turning radius of the bus is 35 ft. The tires are 34 in. by 7 in. 12 ply all around with duals at the rear. Balloon tires 36 in. by 8.25 in. for use with Van malleable iron wheels are optional at no additional cost.

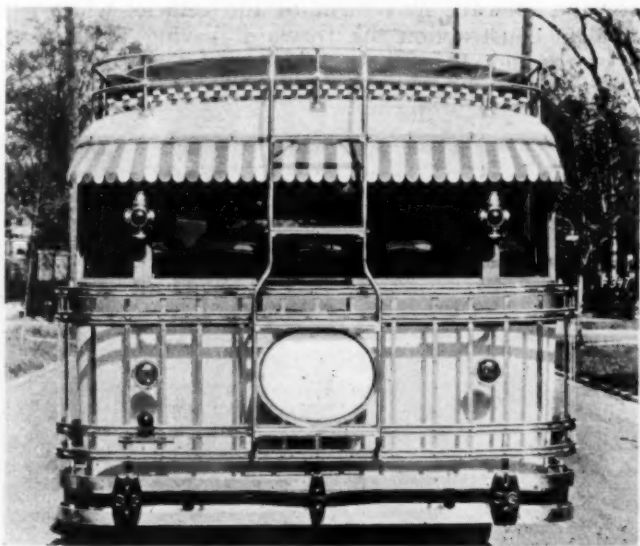
The Van malleable iron wheels have eight spokes and demountable rims. Dual wheels are in the rear. Budd ventilated type disc wheels are optional at slight additional charge.

The inside luggage rack is large enough to handle all the hand luggage normally carried by the full complement of passengers. The headroom over the aisle in the baggage rack section is 74 in. which permits easy access to the rear seat section.

The windows are of the raised-sash type, opening to a height of 11 in. A rear awning covers the corner windows and extends across the back. Cross seats are placed on 33¼ in. centers. They have double cushions with spring padded backs and spring padded headrests. The backs of the seats are recessed to give more knee room. The seats are arranged in pairs—ten on either side of a 14-in. aisle with five comfortable seats extending across the rear.

Ventilation is by means of side and top cowl ventilators and heating is taken care of by a Kysor unit.

Comfort is afforded the driver—his seat being adjustable in two ways—horizontally and vertically. It is of the bucket type without arms and with 17 in. cushions.



Rear View Showing the Awning and Marker Lights

MOTOR COACHES OPERATING IN OHIO must not travel faster than 35 miles an hour in the open country, 15 miles an hour in congested sections of cities, 20 miles an hour in outlying districts of cities, and 25 miles an hour in villages, according to a ruling effective July 1, of the Ohio Public Utilities Commission. Several recent motor coach accidents prompted the commission to issue these regulations, which will be enforced, if necessary, by the revocation of operating certificates and drivers' licenses. The order requires that each motor coach company in the state must file with the commission within 30 days, a copy of its schedules and an analysis of each, showing the average and maximum speeds between all points. The new regulations require that all drivers shall be more than 21 years of age, and that they shall not drive a motor coach more than 250 miles a day, or 1500 miles a week. At railroad crossings, all coaches must be stopped, the inside lights extinguished, and the door opened to permit the driver to hear any approaching train. If sight is obscured at the crossing, the driver must leave the coach and make sure that it is safe to cross.



## Büssing German-Built Chassis Powered with a 100-Hp. Engine

**T**HE Büssing Motors Company, Chicago, has been formed to distribute in this country the German-built Büssing six-wheeled motor truck chassis, among the mechanical features of which are a double-propelled drive, overhead valves, dual carburetor, high-pressure lubricators and electron piston rings.



End View of the Büssing Chassis Showing the Double Propeller Drive

The general advantages of the six-wheeled motor chassis are sufficiently known. However, it is well to point out the features which distinguish the Büssing six-wheeled chassis from other chassis of a similar design. The principal advantage of the six-wheeled Büssing

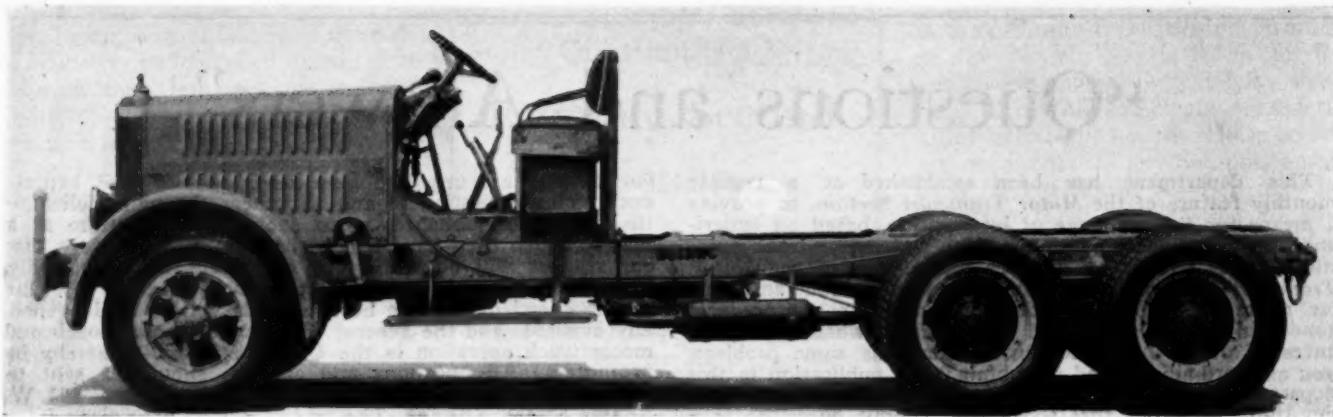
lies in the connection of both rear axles of the chassis and in the manner in which both rear axles influence each other. The fundamental principle of the three axle vehicle is the automatically even distribution of all forces upon the four rear wheels.

It is shown in the line drawing that both rear axles *H1* and *H2* are connected with the chassis by the torque tube and the torque ball heads *S1* and *S2*, while with the usual construction the rear axle *H2* is firmly connected with rear axle *H1* by one torque tube and torque ball head. Consequently at the starting of a six-wheeled vehicle of the tandem construction a pressure of the rear axle of 9,900 lb. and an adhesive co-efficient of .06 will effect a lifting or a discharge of the axle *H1* by 3,100 lb. The axle *H2* will at the same time suffer a corresponding over-loading and just the reverse will occur with the brakes, for the load on axle *H1* will be increased and that on *H2* decreased. Thus a continual reciprocal effect between *H1* and *H2* takes place in connection with an over-loading of the tires which is of detrimental influence, especially to a motor coach with its many stops. With the Büssing construction both axles are fully independent of each other. The reaction of both axles leads to the chassis and is automatically and evenly distributed by the Büssing rolling springs which act as a rocking arm. Although the spring in the tandem arrangement is also constructed as a working member, it cannot serve to distribute the second axle's reaction of driving, and braking force because the second axle's reaction of driving and braking has a direct influence upon the running first axle, as mentioned above.

Another disadvantage of the tandem construction is the second axle's exceedingly short torque tube which, due to the work of the spring on uneven ground, is liable to form considerable angles that are of an unfavorable influence to efficiency. With the Büssing construction the torque ball heads *S1* and *S2* must serve for the forward movement of the vehicle, while with tandem construction the forward driving force of *S2* goes through the first axle *H1* and the total driving force takes effect on the chassis at *S1*. Logically *S1*



The Büssing Chassis with an Extended Frame—Note the Test Load Over the Rear Wheels



Büssing German Built Chassis Powered with a 100-Hp. Engine

should, therefore, be of a stronger construction than S2.

The chief features of the Büssing six-cylinder engine are elasticity, possibilities of regulation, low consumption of fuel and oil even when running light or with a partial load.

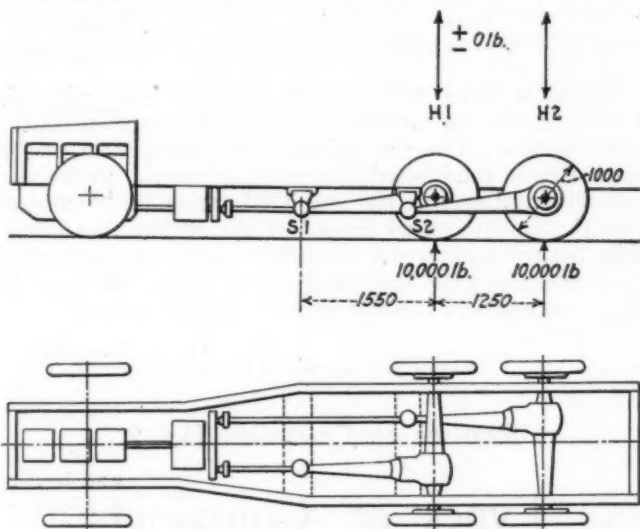
The air for combustion purposes is drawn through filters and pre-heaters into two carburetors with adjustable air valves, these being of the latest construction and fitted with a contrivance for running light, in which special experience gained with the engines of motor coaches has been given due consideration. From the carburetors separate suction pipes each feed three cylinders so that there can be no overlapping of the suction

require regrinding only at fairly long intervals. They are driven from a cam shaft in the crank case by push rods and rockers. All gears are enclosed.

In order to keep the compression, and thus also the output of the engine at its original height, the pistons are of ample length and fitted with five piston rings. The crank shaft is over-dimensioned and carefully balanced with special machines to prevent vibration. The upper part of the crank case is supported in the frame of the car with the motor frame, being suspended at three points on rubber pads. Since the crank shaft is suspended in the upper part of the crank case, the lower part can easily be removed for inspection of the crank shaft, bearings, connecting rods and pistons simply by loosening a few screws. Oil holes with an oil gage and a draw-off cock for the residue are provided.

Lubrication pressure is obtained by a gear pump driven from the cam shaft. The pressure of the oil is adjustable. A centrifugal pump driven by the motor presses the cooling water through the cylinder jackets and the radiator. The pump is lubricated by the cooling water itself, so that no oil or grease can lodge in the radiator. A fan, driven by broad belting from the motor, intensifies the current of air through the radiator which is made in seven sections. The motor can be regulated by either a hand or foot accelerator or by a governor. The ignition and supplementary air feed are adjusted by hand. For the electrical equipment only the best makes of apparatus are used. The extra powerful starter has an output of about 3 hp.

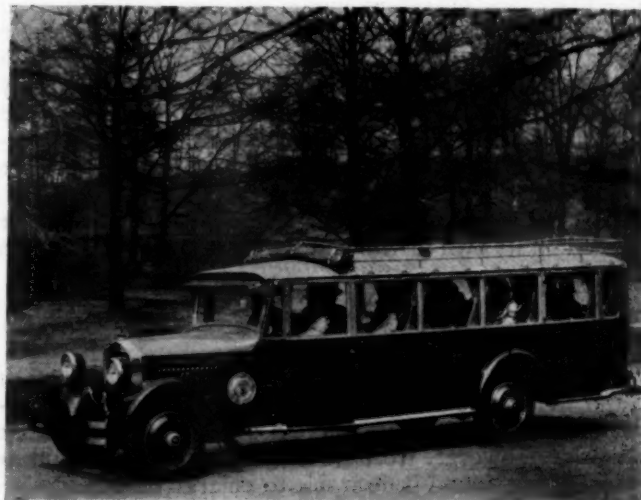
\* \* \*



The Line Drawing Referred to in the Article

cycles with its consequent reduction of the cylinder filling and no dragging of the mixture backwards and forwards with its resultant injurious condensations in the piping and corresponding loss of output. Thus it is possible to make use of heavy fuels without fear of trouble.

The compression chamber is machined on all sides and possesses nearly the ideal ball shape which insures minimum consumption of fuel. For these reasons all Büssing engines are fitted with drop valves in the head of the cylinder, which can be taken off without having to remove the suction and exhaust pipes, thus facilitating the inspection of valves and pistons. This is important when heavy fuels are used, the incombustible residues of which form a sediment on the top of the pistons. The valve seats are water cooled. The valves



Along a Santa Fe Motor Coach Route



# "Questions and Answers"

This department has been established as a regular monthly feature of the *Motor Transport Section*, to provide a means for the exchange of information, based on experience, on every phase of motor coach and motor truck operation. It is strictly by and for the readers of the *Motor Transport Section*. If you have a question about any matter of motor coach operation or maintenance procedure, concerning which you would like to know what the experiences of others have been in handling the same problem, you are cordially invited to submit it for publication in this department. Your name will not be published with the question. In order that those who submit questions may have the benefit of as many viewpoints as possible in the answers to their questions, all readers of the *Motor Trans-*

*port Section* are urged to give the benefit of their experience to our questioners and to others through replies to the questions published, when such questions strike at a matter which they have had to handle. We feel sure that our readers will be willing to co-operate whole-heartedly in replying to the questions published, because by this means knowledge of the best methods will be made generally available and the general efficiency of motor coach and motor truck operation in the United States will thereby be promoted. All questions and answers should be sent to the Editor, *Motor Transport Section, Railway Age*, 105 W. Adams Street, Chicago. The replies, which are selected for publication, will be paid for at the rate of from \$2 to \$5 per reply.

## Replies to Question No. 1

### Motor Coach Operation in Remote Territory

"In establishing motor coach service in small, out-of-the-way places, is it better for the railroad to secure franchises and operate its own line, or to contract with some motor coach operating concern already established in or near that territory?"

It is our opinion that, if the locality in question is such that the railway company may extend coach service to or near this location in connection with other of its proposed motor coach service, it should be done in the name of the railroad company or under its recognized subsidiary; this in order to properly identify its service with railway operation.

If, however, there is no probability of ever having other coach service in the immediate vicinity, it might be well to consider contracting with some organization already operating in the field.

ROBERT RICE,

Vice-president and general manager, Colorado & Southern.

We have endeavored in that section of West Virginia where we are operating motor coaches, to furnish all services ourselves. However, we do have one case where we have arranged for an independent company to furnish the service because the operation is a small one, entirely isolated from all others of our own, and we feel it can be done more cheaply through contract with the independent than if we attempted to render the service ourselves.

No general rule can be laid down. Each case must be studied on its own merits and the most economical action taken.

M. F. STEINBERGER,

Manager Highway Transportation, Baltimore & Ohio.

We have, insofar as our study has gone, found it better to arrange with an established motor coach operating company to operate service in lieu of branch line service. However, we have only one such case, and as yet have not found it desirable to enlarge on the service.

A. W. TOWSLEY,

Assistant to vice-president, Chicago, Rock Island & Pacific.

While it may be a debatable point as to whether the so-called independent or outside company can handle a motor coach operation to better advantage than a carrier, we have felt that one of the things the motor coach business is in need of is stability, fostered by a responsible company. Arguments can be presented in support of both sides of the question, but in the main I believe there will be a greater degree of satisfaction on the part of the riding public if it knows that the coach it may use is operated by a company supported by responsible backers, such as we believe is the case with respect to the railroads.

T. J. THOMAS,

Assistant to president, Chicago, Burlington & Quincy.

We have three motor coach lines on our railroad, which we operate ourselves, taking the place of steam train service. It is our opinion that wherever a motor coach line is established, the railroad should secure the franchise and operate the line itself rather than contract with the existing coach lines, for the reason that it enables the railroad to give better service to the public and to control the long haul business, as is not the case if the motor coaches are operated by outside parties.

H. D. POLLARD,

Vice-president and general manager, Central of Georgia

## Replies to Question No. 2

### Types of Containers

"In the handling by truck of l.c.l. freight, with an operation requiring the use of removable van bodies with a cubic capacity of about 1000 cubic feet and a net load capacity of 5 tons, which is more practicable and economical:

1. A body that rolls on casters, or
2. A body that rolls on and off the vehicle?

If the latter, which is more practicable:

1. A body that rolls on casters, or
2. A body that slides on skids?"

While we do not use any trucking equipment with removable bodies, I believe the roll-off type to be preferable to the lift-off. The roll-off type is more flexible in that it can be rolled off at practically any platform that is large enough to receive it, whereas the lift-off type can be taken off only where there are crane facilities.

Then again, several bodies of the roll-off type may be loaded or unloaded at the same time, but only one body of the lift-off type can be handled at one time with each crane or hoist.

The roll-off type of body can be used at industrial platforms without the installation of hoisting facilities; and, if equipped with casters, may be moved about an industrial plant with considerable freedom.

I believe casters to be preferable to skids because of the greater flexibility and ease of movement.

F. J. CAREY,

Manager of Trucking Operations, Boston & Maine Transportation Co.

For the past ten years I have been actively engaged in studying motor truck transportation methods where the use of demountable bodies was indicated. In all that time I have never found two operations where all the conditions were exactly alike. Each installation must be made after a careful study of all the conditions which govern the selection of a particular type of equipment.

In general, as between the lift type and the rolling type, the lift type is a much more costly installation to make, and should be considered chiefly where there is to be a wholesale movement of bodies of such volume that rapid mechanical handling of bodies by power is necessary. In such a case it is possible that the savings resulting from not equipping the large number of bodies with mechanical rolling devices, would balance the cost of remodeling buildings and installing overhead craneways. An excellent example of this is the Cincinnati Motor Terminals Company, which transfers by lift van and motor truck all the l.c.l. freight interchanged between the different railroads entering Cincinnati. The movement reaches considerable volume, but it is limited between fixed points where cranes have been installed in the different stations.

In almost all other types of service, however, the cost of equipping all of the bodies with roller devices would be much less than the cost of the craneways, and besides the roll-off type will provide an added flexibility since the body can be left at almost any platform with little or no alteration to buildings.

L.c.l. operations where the roll-off type would prove most economical are store-door delivery, replacement of way-freight trains by motor service, replacement of trap-car and ferry car service by motor service, and intra-terminal transfer from one freight house to another.

An excellent example of the latter

### Question No. 3

## Running Second Sections

"Is it advisable, when necessary to provide a second section of any trip on long runs, to operate the coach through to its advertised destination, or may passengers be transferred from the second to the first section at any point enroute when the number of passengers on both sections together does not exceed the seating capacity of the coach running as the first section?"

### Question No. 4

## Handling Mail by Motor Coach

"What is the best method of taking care of mail traffic, previously handled by train, when it becomes advisable to take off the train on account of declining passenger business? Can mail be handled profitably in motor coaches if they are put on when the train is taken off?"

### Question No. 5

## Dispatching of Tractors and Trailers

"In working out an operating plan for a tractor and semi-trailer service intended to provide frequent deliveries between a half-dozen stations, is it better, from the standpoint of good service and of keeping operating costs as low as possible by eliminating tractor standing time and light mileage, to arrange a fixed schedule for the tractors between stations and hold them to it whether or not the trailers they pull have full loads, or to work out some dispatching scheme whereby the tractors can be sent at any time to any station where a fully loaded trailer is waiting?"

is to be found in the Boston terminal of the N. Y., N. H. & H. R. R., where one chassis is kept busy shuttling 10 roll-off bodies among several different freight houses. These bodies are not limited to any one position in each freight house, as they may be rolled on their own castors to any part of the house where the freight is located.

As between a body that rolls on casters and one that slides on skids, if the questioner actually means a mechanical sliding action, there can be no comparison unless in first cost. The additional power required to move such a body when loaded would more than offset any saving in first cost.

The roll-off type itself may be divided into two classes: the straight wheel type, and the swivel wheel type. The straight wheel type is somewhat cheaper and should be used wherever it is permissible to leave the body at the edge of the platform for loading. This would be ideal for a store-door delivery set-up. There should be one empty track at the platform at which any returning truck could deposit its body before taking on another loaded body.

The swivel caster type is much more flexible than any other and should be used wherever the body is to be moved on elevators, or where a limited platform space makes it necessary to take the bodies inside out of the way for loading or unloading. This type often eliminates a second handling of the freight by taking the body to where the freight is located, instead of hand trucking the freight to the body.

There is considerable doubt in my mind as to the practicability of the size of body specified by the questioner. A body of 1000 cubic ft. capacity would have to be at least 18 to 20 ft. long and this would be very bulky to move through heavy traffic or congested city streets. Most trucking companies which have had years of experience handling l.c.l. freight have fairly well standardized on a body about 16 feet long, 7½ ft. wide and 6 ft. high. It is better to fit the body to the average load conditions than to provide one to suit the maximum, which will be half loaded most of the time.

DONALD W. PERIN,  
Chief Engineer, American Freight Service,  
Inc., New York.

*The permanent name for this department has not been decided upon and suggestions are invited. A prize of \$10 will be awarded for the name selected. Readers are urged to submit any questions which occur to them. We extend thanks to those who have written answers for this department.—THE EDITOR.*





# NEWS of the MONTH



## Boston & Maine Transportation Co. Extends Freight Trucking Services *New operations at Holyoke, Springfield and other Massachusetts points result in expedited service and lower handling costs*

The Boston & Maine Transportation Company, during the present month, has greatly expanded the freight trucking services which it performs for the Boston & Maine. The extensions are expected to release to other service at least 40 freight cars a day as well as bring savings in switching and in freight house labor costs. Furthermore it is anticipated that the expedited service will attract additional traffic, particularly between points in the new trucking territory and Boston, Mass. In this latter connection it is pointed out that with store door collection and delivery available at each end of runs, much traffic previously lost to long distant trucking concerns will return to the railroad. At its inception, however, the services have for the most part been placed on a station-to-station basis with provision for arrangements for store door service at certain points.

The first step in the expansion was taken on July 2 when motor trucks were substituted for ferry cars for the handling of freight between the B. & M. freight house at Holyoke, Mass., and industries in that city formerly served by the ferry cars. Freight is now trucked from the freight house to the industries and vice versa, with the greater volume moving from the industries to the freight house. This plan results in a time saving of 24 hours on both inbound and outbound freight at Holyoke. Formerly the ferry cars were loaded one day and switched to Holyoke freight house for transfer and forwarding the following day. The situation was the same with inbound freight. With the truck movement, however, the freight trucked into the freight house is forwarded the same day and freight received is trucked to industries the day of receipt. In addition there is considerable saving in switching costs at this point since the cost of switching at Holyoke had formerly been the highest on the entire B. & M. system.

The second extension was inaugurated on July 8 when Holyoke became a concentration point for Easthampton, Mass., l.c.l. freight. This latter is now trucked to and from the Holyoke and Easthampton freight houses. Mount Tom l.c.l. freight is also included in this Holyoke concentration and freight is also trucked from one Easthampton industry which formerly loaded a ferry car on Holyoke. Like in the former case the time saving here is also expected to be 24 hours.

On July 11 B. & M. l.c.l. freight between Springfield, Mass., and Holyoke was also included in the trucking service.

### P. & L. E. Begins Second Truck Operation

The Pittsburgh & Lake Erie established its second l. c. l. freight trucking operation on July 15 when motor trucks were substituted for two local freight trains between Pittsburgh, Pa., and Youngstown, Ohio. Two trucks are employed in the new service, one operating between Pittsburgh and Beaver Falls, Pa., and the second between Beaver Falls and Youngstown.

Thus the service is similar to the initial freight trucking service on this road, operating on its Monongahela division between Pittsburgh and Brownsville, Pa., as announced in the *Motor Transport Section* of June 22, page 1541.

At the same time trucking in lieu of ferry car service commenced between a number of industries in Brightwood, a suburb of Springfield, and Springfield freight house. Still another trucking service installed at Springfield involves handling of transfer freight between the B. & M. and the Springfield freight house of the Boston & Albany and the New Haven. These operations have resulted in a speeding up of service by at least one day on practically all freight that is being trucked.

On July 15 trucks were placed in service for the handling of l.c.l. freight between Chicopee and Chicopee Falls, Mass., as well as between Holyoke on the one hand and Chicopee and Chicopee Falls on the other and between Springfield and both Chicopee and Chicopee Falls. Truck-

ing in lieu of ferry cars service is also provided industries at both Chicopee and Chicopee Falls. Before the inauguration of the first of these services, i.e., the trucking of l.c.l. freight between Chicopee and Chicopee Falls, Boston and Mechanicville, N. Y., loaded in one car all l.c.l. freight for Chicopee and Chicopee Falls. This was set out at Chicopee and then forwarded to Chicopee Falls the next day. At present the freight is handled by truck on the same day the car is received or forwarded at Chicopee Falls.

On July 18 Northampton, Mass., became a concentration point for l.c.l. freight moving between Boston and Hadley and Amherst, Mass. Boston freight for these latter two points is now loaded in a Northampton car instead of in a separate car as formerly. It is then handled by truck to and from Northampton on the one hand and Hadley and Amherst on the other. Trucking service has also been installed to handle l.c.l. freight between Holyoke and Northampton, Hadley, Amherst and Hatfield. All inward freight for Hadley and Amherst (except that coming from Boston which was discussed at the opening of this paragraph) is now loaded on Holyoke and trucked from there. Inbound freight for Northampton coming from points other than those which make direct cars to Northampton will also be loaded on Holyoke and trucked from there. Outbound l.c.l. freight from Hatfield, Hadley and Amherst will also be trucked into Holyoke as well as outbound freight from Northampton except where there is sufficient tonnage to warrant a direct car from Northampton to destination.

On July 22 trucking was started in both directions between Greenfield and South Deerfield, Whately and North Hatfield. This highway service was installed to relieve local freight train crews of stopping to unload and load l.c.l. freight.

A similar service was inaugurated on July 25 between Holyoke and Belchertown and Ware. This relieves local freight train crews of loading and unloading to some extent and also saves the expense of handling the Boston-Ware car in a passenger train, which made it necessary to pay mixed train rates to the crew of this passenger train. In addition a time saving of from 24 to 48 hours on the l.c.l. freight is expected to result.

Practically all of this service is performed by a local truckman at Holyoke under contract with the Boston & Maine Transportation Company, the only exception being that which is out of Greenfield. This latter is performed under contract by a trucking concern located at Turners Falls, near Greenfield.

## Union Pacific Buys Large Nebraska Motor Coach Lines

The Union Pacific became a dominant factor in the motor coach operating situation in Nebraska when, on July 1, it purchased three of the largest independent lines operating in that state. Rapid development in the operation of motor coaches by steam railways in Nebraska has taken place during the past few months. The Chicago, Burlington & Quincy was the first to engage in highway operation in the state on a substantial scale. The Burlington Transportation Company, its subsidiary, now has several lines in operation between certain of the principal cities in the state served by the railway. Within the past few days, the Missouri Pacific has entered the state, with the motor coaches of the Missouri Pacific Transportation Company establishing a line between Omaha, Neb., and Kansas City, Mo. Instead of establishing new motor coach lines, the Union Pacific has purchased three existing independent lines serving many of the cities in its territory.

The most important of the three companies now owned by the Union Pacific is the Interstate Transit Lines, which was purchased from Russell J. Walsh. This company has 45 motor coaches operating between Omaha and Sioux City, Lincoln, Fremont, Wahoo, Kansas City, Mo., and Fairmont, Minn.; between Lincoln and Fremont, Grand Island and Nebraska City; and between Fremont, Norfolk and Dodge. The existing organization of the Interstate Transit Lines was not disturbed, and Mr. Walsh, the former owner, continues as president and general manager of the company.

Next in importance among the three lines purchased by the Union Pacific is the Cornhusker Stage Lines, formerly owned by Oliver W. Townsend. With 29 motor coaches in services, these lines operate in Nebraska between Lincoln, Columbus and Norfolk; between Hastings and Lincoln, Grand Island, Red Cloud, Harvard, Superior, Clay Center and Holdrege; and between Fremont, Grand Island and North Platte. The present organization is being maintained, as in the case of the Interstate Lines, except that it will be co-ordinated with that of the Interstate system, which will be the principal operating organization in charge of all of the services involved.

The other of the three lines taken over by the Union Pacific is the Queen City Coach Lines, which was purchased from E. J. Delehant. Six motor coaches owned by this unit operate between Beatrice and Lincoln, Marysville, Fairbury and Pawnee City. Altogether, the Union Pacific acquired 80 motor coaches through these three purchases.

It was stated in the announcement of the purchase of these lines that the Union Pacific "will continue their operation as first-class transportation facilities, and will add from time to time, as conditions warrant, extensions to the lines in Union Pacific territory, and will secure from

### Motor Coaches Advocated to Restore Rail Traffic

Motor coach operation as a means of bringing back to the railways traffic which they have lost to private automobiles, and as a means also of increasing travel over the railways by bringing passengers to central terminals, where they would leave the motor coaches and continue their travel by rail, was advocated by B. T. Peyton, manager of the Union Pacific Stages, Inc., in support of this company's application for permission to operate motor coaches between Weiser, Idaho, and the Utah-Idaho state line, at a hearing before the Idaho Public Utilities Commission. This line is a part of the extensive highway system with which the Union Pacific is proposing to supplement its railway lines in the northwest.

time to time such additional or new equipment as becomes necessary." The Interstate Transit Lines will continue to operate from the union motor coach terminal, which is a modern and completely-equipped facility located at the corner of Sixteenth and Jackson Streets in Omaha. The amount paid for these lines was not stated.

The Union Pacific has engaged in motor coach operation in various parts of its territory for some time, but the older operations have been confined to the northwest territory adjacent to the lines of the Oregon-Washington Railroad &

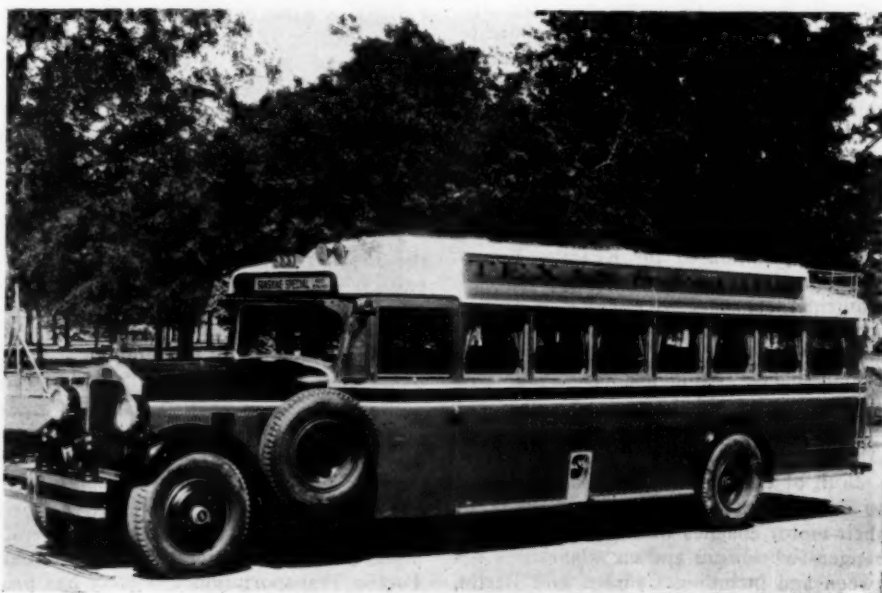
Navigation Company, and to the southwest territory occupied by the Los Angeles & Salt Lake. The purchase of these three independent lines gives the Union Pacific a substantial motor coach operating system in Nebraska, and it is anticipated that the service will be extended to other portions of the Union Pacific's extensive system of railway lines, as conditions warrant. It is estimated that the Union Pacific now has approximately 200 motor coaches in operation, making it one of the largest steam railway operators of motor coaches in the United States.

### Motor Coach Companies Issue New Advertising Literature

Two motor coach operating subsidiaries of railways have recently issued new booklets describing the vacation advantages of the territories which they serve. These are the Northland Transportation Company, subsidiary of the Great Northern, and the Boston & Maine Transportation Company, subsidiary of the Boston & Maine.

The Great Northern folder includes a large illustrated map of the territory served by the Northland's lines, the illustrations portraying the outstanding scenic features of the various localities. It also describes in some detail a number of the cities reached by Northland motor coaches, emphasizing their vacation advantages. The Northland has discontinued the use of the "Great Northern Goat" in its insignia and has adopted the "Bull Moose."

The Boston & Maine Transportation Company has issued a 20-page folder describing its motor coach and rail tours in New England. These tours were highly popular last year when they were offered for the first time and are expected to attract a considerably heavier business this year. Eight tours are described in the new folders, all on the all-expense basis.



Train Connection Motor Coach, a Model 54 White, Operated by the Texas & Pacific Between Millsap, Tex., and Mineral Wells



## N. J. Commission Approves Applications for Atlantic City-Philadelphia Runs

The Board of Public Utility Commissioners of New Jersey in a recent order approved, under certain conditions, municipal consents, which had been obtained by several highway companies, for the operation of motor coaches on the Atlantic City-Philadelphia route. Included among these operators were the Pennsylvania General Transit Company and the Reading Transportation Company, respectively highway subsidiaries of the Pennsylvania and the Reading. Among the other applicants whose petitions were granted were: The Public Service Co-ordinated Transport, the Union Bus Company, the Parlor DeLuxe Coach Company and the White Way Tours.

In granting applications of the non-railroad operators the board said that "the railroads having permitted local transportation by motor coach to develop without objection, they cannot now be heard to object to the extension of facilities to meet the demands of this kind of street transportation. The character of the service proposed to be furnished by the railroads will be express service in the nature of railroad service, therefore the board will permit the railroads to supplement their railroad service with motor coach service but does not consider that their willingness to do so should preempt the territory against other lines which have been carrying on interstate and intrastate service previous to the railroads' proposed motor coach operation." The total number of motor coaches proposed under all applications amounted to 135. This number the board found "clearly unnecessary to meet the demands of the service" and thus reduced the number proposed by each applicant as it approved the consents.

The application of the Pennsylvania General Transit Company was for approval of municipal consents to operate 25 motor coaches between and including Atlantic City-Camden, N. J., to Philadelphia. Consents had been granted by all the municipalities situated along the route except Mullica and Galloway townships, which under the statutes precluded the petitioner from doing any business in these municipalities.

The application of the Reading Transportation Company was for approval of municipal consents to operate 25 motor coaches between and including Ocean City and Camden, N. J., via Atlantic City to Philadelphia. Municipal consents had been granted to this petitioner in all places along the route except Egg Harbor, Absecon, Galloway and Longport.

Both of these railroad operators agreed to accept the restriction that drivers of their motor coaches would not accept passengers who begin and end their trips between and including Camden and Berlin, N. J.

In approving the permits of the Reading and the Pennsylvania the board stipu-

lated that 10 motor coaches be placed in service by each to Atlantic City instead of the 25 sought. In the case of the Reading, however, an additional two were approved between Camden and Ocean City. Other conditions were that the motor coaches are permitted: To accept passengers in Camden for discharge in Atlantic City and vice versa; to accept passengers in Berlin for discharge in Atlantic City and vice versa and to accept passengers in Hammonton for discharge in Atlantic City and vice versa. In concluding, the decision also affirms other conditions imposed in the individual municipal consents.

Under the foregoing decisions the consents of the White Way Tours, the Parlor DeLuxe Coach Company and the Union Bus Company were also approved with

the number of motor coaches proposed reduced respectively from 20 to three, from 25 to five and from 20 to four.

The application of the Public Service Co-ordinated Transport was for approval of consents to extend its present Atlantic City-Egg Harbor route to Berlin and to operate 11 additional motor coaches. It was granted for five motor coaches. The Pennsylvania, the West Jersey & Seashore and the Atlantic City railroads appeared in opposition to this petition. In this connection the board stated that present routes on which the Public Service Co-ordinated Transport conducts local business between Camden and Hammonton and between Egg Harbor and Atlantic City were acquired several years ago without any objection by the railroad. After hearing the evidence the board declared itself satisfied that the Public Service Co-ordinated Transport should continue to provide the local highway transportation over the entire route between Camden and Atlantic City.

## New Motor Coach Lines Added by Missouri Pacific

Continuing the rapid expansion of its motor coach system, which has enabled it to cover some three thousand miles of highway during the past seven months, the Missouri Pacific, through its subsidiary, the Missouri Pacific Transportation Company, has applied for permission or secured permission to operate motor coaches on additional lines in four states.

Entering Nebraska for the first time, the Missouri Pacific Transportation Company has been granted permission by the Nebraska Railway Commission to operate over two routes in that state. One route extends from Omaha, Neb., to Falls City, over which the company will operate one round trip daily. The coach will leave Omaha at 8:00 A.M., and will arrive at Falls City at 12:15 P.M. Regular stops will be made at all cities on this route, and other stops will be made on signal. Returning, the coach leaves Falls City shortly after noon, and reaches Omaha at 4:30 P.M. The other route lies between Nebraska City and Lincoln, over which two round trips daily will be operated.

Extending its operations in Louisiana, the Missouri Pacific Transportation Company secured permission from the Louisiana Public Service Commission to operate motor coaches between Monroe, La., and Bastrop, Rayville and Mer Rouge. The application for the line between Monroe and the Arkansas state line was granted conditionally, the transportation company being required not to accept local passengers between Marion and Farmerville, a distance of 14 miles.

In applications for permission to operate additional motor coach lines, the Missouri Pacific Transportation Company has proposed its first service in the state of Kansas, and additional service in Mis-

service Commission for permission to operate two motor coach lines in northeastern Kansas. One proposed line would extend from Atchison, Kas., to St. Joseph, Mo., and the other line would extend from Kansas City, Mo., through a number of Kansas points to the Kansas-Nebraska state line. This second route is intended to be a part of the through route proposed by the Missouri Pacific between Kansas City and Omaha.

In Missouri, the Missouri Pacific Transportation Company has filed an application for a certificate to permit the operation of motor coaches between De Soto, Mo., and Festus, over highway No. 21.

The Missouri Public Service Commission has denied the motion of the Missouri Pacific for a rehearing on its application

### P. R. T. Begins Half Hour New York-Philadelphia Service

The Peoples Rapid Transit Company recently inaugurated a half-hour service between New York and Philadelphia. Motor coaches now leave New York every 30 minutes between 9:30 a.m. and 5:30 p.m. A like service is provided in the opposite direction from Philadelphia to New York.

The company is also operating four daily coaches from New York to Washington, D. C. These leave the new motor coach terminal opposite Pennsylvania station at 8:30 and 11:30 a.m., 1:30 p.m. and 12 midnight. The one way fare between New York and Philadelphia is \$2 and between New York and Washington it is \$5.75.

to discontinue two passenger trains between Pleasant Hill, Mo., and Joplin, and to substitute motor coach service operated by the Missouri Pacific Transportation Company between Kansas City and Joplin. The commission held that public necessity requires a continuation of train service, and in refusing to grant the permit for motor coach operation, held that there is already ample highway service between Kansas City and Joplin via the route over which the Missouri Pacific Transportation Company proposed to operate.

### C. N. J. Substitutes Motor Coach for Train Service

The Board of Public Utility Commissioners, in a recent order, granted the petition of the Central of New Jersey to substitute motor coach service for passenger trains operating on its Southern division between Winslow Junction and Bridgeton, N. J. The change was made on February 21 when it was informally sanctioned by the board in order to expedite service to Atlantic City by avoiding the stop at Winslow Junction which is at the foot of a heavy curved ascending grade.

Stops are now made at Hammonton, three miles south of Winslow Junction, and motor coach service in co-ordination with the scheduled trains is provided at Hammonton and Winslow Junction for points on the Southern division to Bridgeton. Mail is handled by motor coach and express shipments by truck between points on the motor coach route while freight trains continue in operation. Both motor coach and truck are contracted for by the Central of New Jersey.

### New P. R. T. Motor Coach Terminal at New York

The Peoples Rapid Transit Company, motor coach operating company recently purchased by the Pennsylvania, opened a new terminal opposite Pennsylvania Station at 242 West Thirty-fourth street,

New York, on July 15. The new terminal is utilized by several motor coach lines entering New York as the announcement of the opening states that 218 motor coaches will depart from it daily. It is under the supervision of John J. Reddington, passenger traffic manager of the New York division of the P. R. T.

Other companies operating from the new terminal are the Greyhound-Yelloway Lines, also affiliated with the Pennsylvania, the Great Lakes Stages, Colonial Coach Lines, De Camp Bus Lines, Manhattan Transit Company, the Public Service Corporation of New Jersey, the Inter-city Public Service Company and the Hackensack, Westwood and Ridgewood Lines. The consolidation of the terminals of these companies, it is pointed out, makes it possible for passengers to board,

from this station, coaches for all points in the United States. In addition, reservations may be made for airplane trips on the lines of the Curtiss Flying Service, the Coastal Airways, the Colonial Air and the Wings Over New York companies.

Facilities are provided at the new terminal for the simultaneous loading or unloading of 20 motor coaches. Vehicles enter on Thirty-third street with an exit on Thirty-fourth street. Loading and discharging of passengers is carried on off the street and thus there is no interference with traffic.

In the terminal there are provided waiting rooms, rest and toilet facilities and porter service. Travel and vacation information bureaus are also included together with a chartered coach office where motor coaches may be rented.

## Secretary Lamont Appoints Committee on Maintenance of Motor Vehicles

In an effort to reduce the number of highway accidents by eliminating one of the most serious causes of such accidents, Secretary of Commerce Robert P. Lamont, as chairman of the National Conference on Street and Highway Safety, has appointed a committee on the maintenance of motor vehicles. This committee is composed of representatives of more than twenty interests, including manufacturers, automobile dealers, motor clubs, and other users, each concerned with a specific phase of the vehicle maintenance problem, and has already had a preliminary meeting to decide upon the best method of study and procedure.

Inspections of 5,057,480 cars in ten states, during 1927 and 1928, showed that 1,694,758 required brake correction to comply with existing laws, 230,547 had defective lamps, 77,643 had defective steering gear, and approximately 200,000 were below legal requirements in their

equipment, such as horns, mirrors, windshield wipers, etc. Estimates from various sources indicate that 5 to 40 per cent of all serious accidents on the highways are due to faulty maintenance. The new committee's final report will be widely distributed, so that the benefits to be derived from the execution of its recommendations may be realized in the fullest measure, according to the commerce department.

William Candler, vice-president of the Atlanta-Biltmore Hotel Company, Atlanta, Ga., is chairman of the committee on maintenance of motor vehicles, and Howard M. Starling, manager of the safety department of the American Automobile Association, is secretary. Other members of the committee are:

Armstrong, R. S.,  
Motor Vehicle Conference Committee,  
366 Madison Ave.,  
New York City.

Bachus, E. T.,  
Bachus Motor Company,  
Baltimore, Md.

Banigan, Leon F.,  
Motor World Wholesale,  
Chestnut and 56th Streets,  
Philadelphia, Pa.

Baughman, Col. E. Austin,  
Commissioner of Motor Vehicles,  
Baltimore, Md.

Boynton, N. H.,  
National Lamp Works,  
General Electric Company,  
Nela Park, Cleveland, Ohio.

Buettner, Walter J.,  
Bendix Corporation,  
Chicago, Ill.

Olander, Oscar G.,  
Dept. of Public Safety,  
Lansing, Mich.

Carl, Edmond O.,  
614 H St., N.W.,  
Washington, D. C.

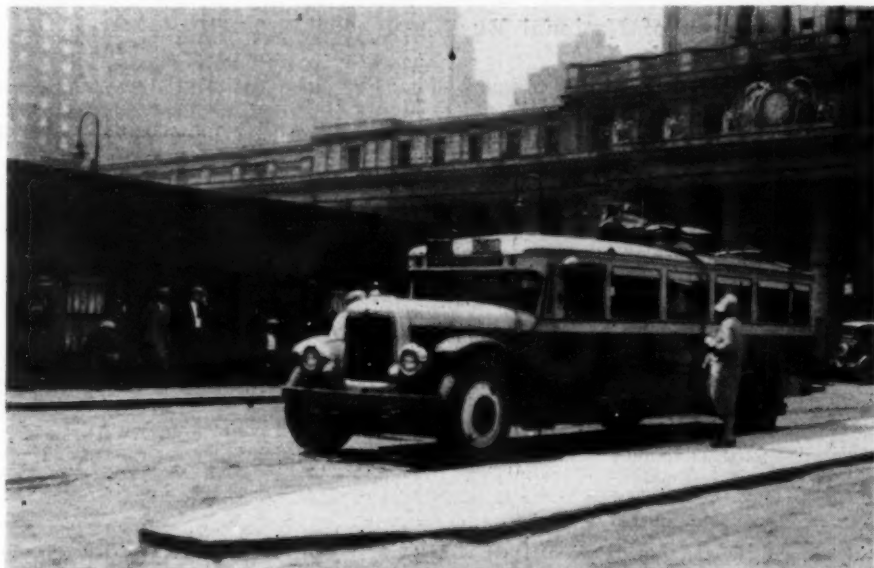
Clark, Charles P.,  
Asst. General Manager,  
American Automobile Assn.,  
Washington, D. C.

Crittenden, E. C.,  
Bureau of Standards,  
Washington, D. C.

Donohue, Ed A.,  
Commissioner of Traffic,  
Cleveland, Ohio.

de Valliere, Mrs. Louis T.,  
720 Riverside Ave.,  
Trenton, N. J.

Falge, R. N.,  
General Motors Research Laboratory,



A New York-Philadelphia P. R. T. Motor Coach Leaving the New Terminal at New York.—Pennsylvania Station in Background



General Motors Bldg.,  
Detroit, Mich.  
Fitzsimmons, F. W. A.,  
Pres., Michigan Mutual Insurance Co.  
Detroit, Mich.  
Goebel, R. F.,  
Rubber Assn. of America,  
Fisk Bldg.,  
New York City.  
Hall, A. V.,  
Sherwood Hall Company,  
Grand Rapids, Mich.  
Haresnape, Val,  
Sec., Contest Board,  
American Automobile Assn.,  
Washington, D. C.  
Horrocks, T. A., Sec.,  
Minnesota Truck Owners Assn.,  
714 Lumber Exchange,  
Minneapolis, Minn.  
Hastings, Charles D.,  
Hupmobile Motor Co.,  
Detroit, Mich.  
Huffman, Russell, Sec.,  
Motor Vehicle Conference Committee,  
366 Madison Ave.,  
New York City.  
Hull, Harter B.,  
President, Harter B. Hull Co.,  
Dodge Bros. Dealers,  
Baltimore, Md.  
Jack, Frank,  
Chicago Motor Club,  
Chicago, Ill.  
Jensen, Holger,  
Maryland Casualty Co.,  
Baltimore, Md.  
Klugh, Claude, Gen. Mgr.,  
Pennsylvania Auto Dealers Assn.,  
Harrisburg, Pennsylvania.  
Little, W. F., Sec.,  
Electrical Testing Laboratories,  
80th Street & East End Ave.,  
New York City.  
Miles, L. L., Pres.,  
Louisville Taxicab & Transfer Co.,  
Louisville, Ky.  
Mineur, Henry J.,  
Safety Director,  
Horton Ice Cream Co.,  
Brooklyn, N. Y.  
Moynihan, M. A.,  
Gemmer Mfg. Co.,  
Detroit, Mich.  
Oishei, John R.,  
Trico Products Corp.,  
624 Ellicott St.,  
Buffalo, N. Y.  
Palmer, L. H.,  
Vice-Pres. & Gen. Mgr.,  
Fifth Avenue Coach Co.,  
New York City.

Parker, Geo. A.,  
Registrar of Motor Vehicles,  
Boston, Mass.  
Schmitt, I. K.,  
Willard Storage Battery Co.,  
Cleveland, Ohio.  
Wadsworth, P. K.,  
Gen. Mgr., Great Lakes Stages,  
Terminal Tower,  
Cleveland, Ohio.  
Whitney, Prof. A. W.,  
Associate Gen. Mgr.,  
Natl. Bureau of Casualty and Surety  
Underwriters,  
1 Park Ave.,  
New York City.  
Williams, Sidney J.,  
Director, Public Safety Div.,  
National Safety Council,  
108 E. Ohio Street,  
Chicago, Ill.  
Wall, Richard J.,  
Pres., Yellow Cab Co.,  
Toledo, Ohio.

### Pennsylvania Considering Motor Coach Service on Long Island

Intimations that the Pennsylvania General Transit Company, highway subsidiary of the Pennsylvania, is contemplating a network of motor coach routes to supplement the rail services of the Long Island, also owned by the Pennsylvania, were gleaned from a recent hearing, following which the New York Public Service Commission granted the application of the North Shore Coach Service, Inc., for a certificate to operate a motor coach line from East Norwich, Long Island, N. Y., to the Nassau-New York County line at Marcus avenue in the Borough of Queens.

The Long Island appeared in opposition to the petition, contending that the proposed line would be in direct competition with its Oyster Bay branch. The commission in granting the application held that, "It is sufficient . . . that the petitioner gives to the patrons of the coincident route access to other localities not served reasonably and conveniently by any other means of transportation. This means of access elsewhere the petitioner will give, and while it is better that motor coach routes should not coincide it is not an objection that cannot be overcome by convenience of the service."

### Annual Meeting of National Bus Division, A. A. A.

Adoption of proposals for the reorganization of the National Motor Bus Division of the American Automobile Association and for the general revision of its by-laws was the outstanding development at the annual meeting held at Buffalo, N. Y., July 1 and 2. A committee was appointed to act on these proposals and, after drawing recommendations, is to suggest a date for a special meeting of the division for the purpose of considering the committee's findings.

A second committee was appointed to study motor coach tax developments in the various States from data now being prepared by the Division's research committee. Other business comprised committee reports and discussions thereon, the presentation of papers on motor coach subjects and the election of officers.

The papers were confined to three subjects: Advertising the motor coach business, advantages of special party service and the legal situation in the motor coach

field. These topics were discussed in papers read respectively by John B. Walker, director of publicity, Motor Transit Management Company; A. T. Warner, general manager in charge of traffic, Public Service Co-ordinated Transport of New Jersey, and A. L. Janes, assistant general counsel, Great Northern Railway.

At the election of officers, A. M. Hill of Charleston, W. Va., and G. P. McCallum of Detroit, Mich., were re-elected respectively to the positions of chairman and vice-chairman.

### Issue Proceedings of St. Louis Meeting of Motor Transport Division

The proceedings of the meeting of the Motor Transport Division, American Railway Association, held in St. Louis on February 26-28, and of the joint conference with representatives of the automotive industry held on March 1, have been printed and distributed to the railway members of the division.

The final tabulation shows that the meeting was attended by 100 representatives on behalf of 217 memberships in the association. In addition to these, there were four representatives who registered for five associate members of the division. The open meeting was attended by 53 representatives of 30 organizations in the automotive industry.

### British Railways Report on Highway Services

Railways of Great Britain reported a loss equivalent to approximately \$93,000 on their highway services during the year ending December 31, 1928. For the same period the loss on collection and delivery services amounted to the equivalent of \$6,459,972. The former compares with a 1927 motor transport profit of about \$8,050 and the latter with a loss of about \$5,657,304 on collection and delivery services during this previous year.

The combined gross receipts from the highway services (exclusive of collection and delivery) of the four companies during 1928 amounted to \$1,372,790 and compared with 1927 receipts of \$1,097,201. Expenses during 1928, however, increased more rapidly and thus offset the augmented revenue. The expense figures are: 1927, \$1,089,151; 1928, \$1,465,101. The Great Western was the heaviest loser on these highway operations as its 1927 profit of about \$45,000 was transformed into a 1928 loss of nearly \$50,000. Since highway revenues of this road, however, rose approximately \$250,000 over 1927 and expenses increased nearly \$350,000, the unfavorable 1928 showing is no doubt due to expenses in connection with the establishment of new lines. As pointed out from time to time in the *Motor Transport Section* this road has been active during the year in extending its motor transport services by consolidations with existing highway operators.

The Southern was the only one of the four roads to report a profit from highway operations during both 1927 and 1928.

### Rate War In Pacific Northwest

The fare for transportation by motor coach between Seattle, Wash., and Portland, Ore., was recently reduced to \$2.50 by the North Coast Transportation Company, the largest operating company serving the two cities, in order to meet the competition of three smaller competitors. Competition between these points has been so severe during the past two years, that rate-cutting has been common. There were some predictions that the one-way fare would be reduced to \$1 before the rate-war is ended. This would make the rate 1¾ cents a mile.

Originally the fare between Portland and Seattle was \$5.50, with round-trip tickets at \$10. Later this fare was reduced to \$3.50 one way, and \$6.50 round-trip. The latest reductions bring the fare down to less than one-half of that which applied originally.

Its 1927 profit amounted to approximately \$2,000 and this was increased to nearly \$3,000 in 1928. The 1928 losses on the other roads range from approximately \$300 on the London, Midland & Scottish to the \$50,000 loss on the Great Western. The 1928 motor transport loss of the London & North Eastern amounted to approximately \$43,000. The bulk of the motor transport revenues is from passenger services although a substantial portion on the London, Midland & Scottish and the London & North Eastern arises from highway freight services. The Great Western, the largest operator, reports 1928 revenues of \$1,133,000 from highway passenger services and \$16,700 from highway freight services. The Southern reported no revenues from highway freight services.

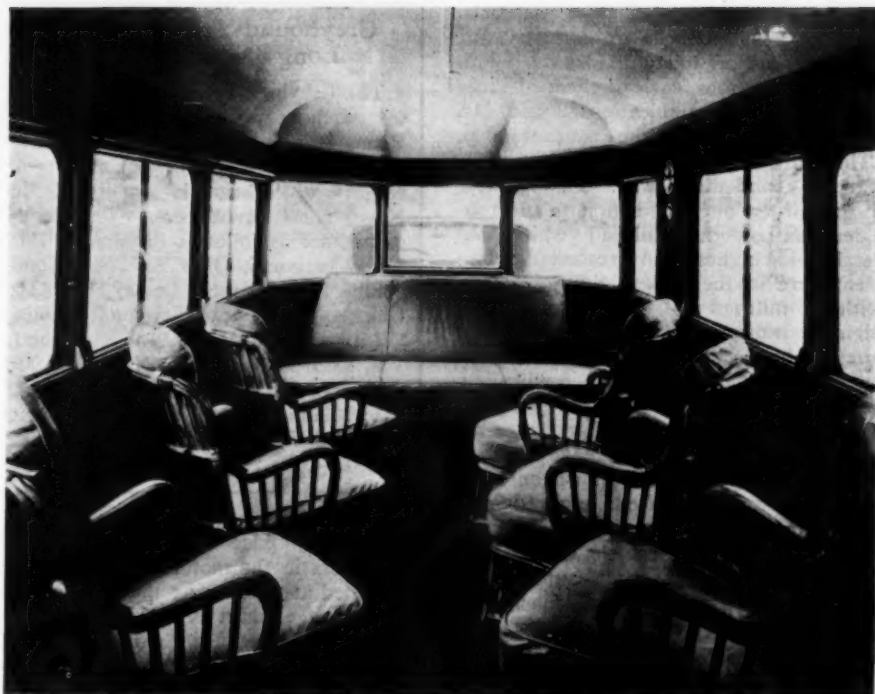
### Seaboard Motor Coaches to Carry Trunks

The Motor Transportation Company of the South, highway subsidiary of the Seaboard Air Line, recently commenced handling trunks, not exceeding 150 pounds in weight, on motor coaches without additional charge to the holder of a motor coach ticket for the journey between Jacksonville and Tallahassee.

Formerly if passengers desired such baggage transported it was carried on Seaboard trains and thus a railroad ticket had to be purchased. These railroad tickets were honored on motor coaches but only hand baggage was carried on the regular motor coach ticket.

### The T.A.T. Aerocar

The Transcontinental Air Transport, which in conjunction with the Pennsylvania and the Santa Fe is operating a 48-hour coast-to-coast air-rail service, has adopted a specially designed motor coach



Interior View of Trailer Unit

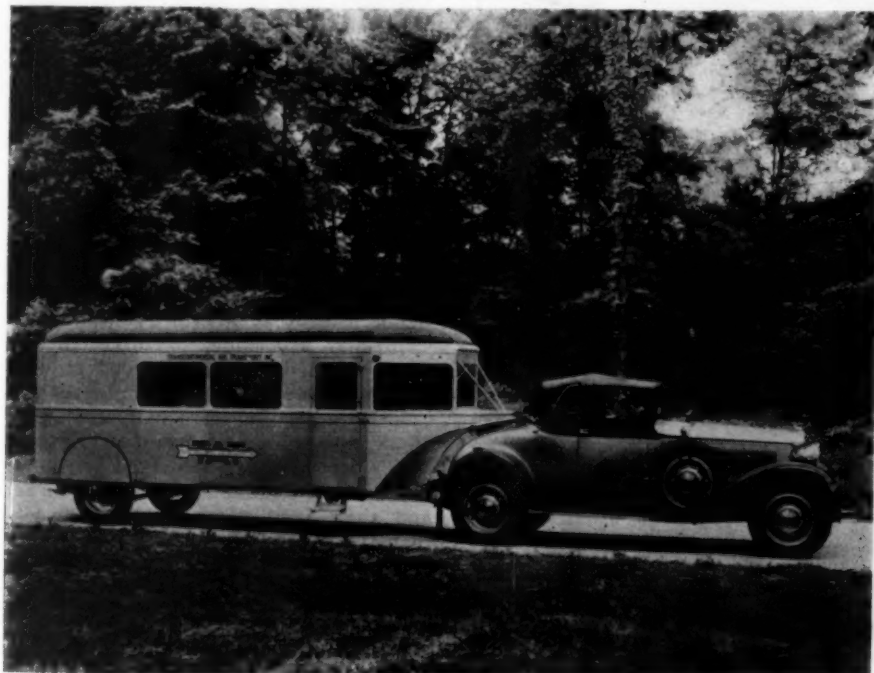
built by the Aerocar Company of Detroit for the transportation of passengers between downtown sections and airports of cities along its route.

The interior and exterior views of this motor coach which has been designated the "Aerocar" are reproduced in the accompanying illustrations. As will be noted from these pictures the section for passengers is a trailer to a Studebaker roadster which serves as the power unit. The trailer has seating accommodations for 14 passengers and has a telephone connection to the driver's seat in the power unit. An Aerocar will be located at each city where

stops are made along the T. A. T. New York-Los Angeles route.

### Chicago World's Fair to Include Transportation Pageant

A great pageant showing a century of progress in the transportation field—highway, waterway, railway, and airway—is to be one of the outstanding features of Chicago's 1933 centennial celebration, according to an announcement by Rufus C. Dawes, president of the Fair. According to the plan now being worked out, with Edward Hungerford, who was director of the Fair of the Iron Horse which the Baltimore & Ohio staged in 1927, acting in an advisory capacity, wagon and automobile manufacturers, airplane builders, and the railways of the country will combine



The T.A.T. Aero Car

### Injunction Asked to Prevent Competition

Court action to prevent competition from other motor coach lines has been taken by two highway lines already operating in the state of Mississippi. The Pickwick-Greyhound Lines have applied to the Hinds County chancery court for an injunction against M. Benton, the state railroad commission and its secretary to prevent the operation by Benton of a motor coach line between Brookhaven and Jackson, over which route the Pickwick-Greyhound lines are already operating. A similar suit has been filed by two individuals to prevent the operation by the Motor Transportation Company of a motor coach line between Vicksburg and Jackson.



in staging the transportation spectacle.

"The great science, or industry, of modern transport today divides itself into four main sections, each of them of large importance and ramifications," said Mr. Dawes, in outlining the pageant plan. "These are the railway, the highway, the waterway, and the airway. Taking these in that order, one comes first to the consideration of the railroad which has reached its highest and greatest development here in the United States. Along with the railroad was the development of highway transportation, and we are planning to show a hundred years of progress on this, on a broad circular roadway to parallel the railroad tracks, and to extend into the lake.

"Here would be shown stage coaches, conestoga and other freight wagons, and the private carriages of one hundred years ago. Then would come, in due time and place, the automotive vehicle. Our visitors would see the first crude automobiles, gasoline, steam and electric-driven, cars which were steered by only one wheel, and cars which one entered through the middle of the back seat. In their due place in the procession would be the modern types of automobiles, motor coaches and motor trucks, and the like."

#### New York Commission Hearing on Exhaust Pipe Location

The Public Service Commission of New York, on June 12, conducted a hearing for the purpose of inquiring into the location of exhaust pipes and into heating arrangements on motor coaches operated under New York certificates of public convenience and necessity.

It was stated to be the purpose of the inquiry to remove all possible danger of

#### Greyhound-Yelloway Lines Long Distance Fares

The Greyhound-Yelloway Lines, motor coach operators affiliated with the Pennsylvania, list several of their long distance fares from New York City in recent advertisements published in New York newspapers. The fares quoted are as follows: Pittsburgh, Pa., \$10; Cincinnati, Ohio, \$17.25; Indianapolis, Ind., \$18; St. Louis, Mo., \$23; Chicago, \$20.50; Cleveland, Ohio, \$12.50; Detroit, Mich., \$16; Richmond, Va., \$8.20; Greensboro, N. C., \$12.90; Augusta, Ga., \$20; Jacksonville, Fla., \$25; Miami, Fla., \$35; St. Petersburg, Fla., \$32.85; West Palm Beach, Fla., \$33.50.

carbon monoxide from reaching the passengers in the motor coaches. It was suggested at the hearing that as a general proposition exhaust pipes should be carried to the rear of the motor coach and for an inch or two beyond. As to the heating of motor coaches the majority of those who presented testimony said that the use of exhaust gas for this purpose was not entirely satisfactory.

#### Correction

In the article entitled "New England Has Efficient Stores System," which appeared in the June 22 issue of the *Motor Transport Section*, there was a typographical error in the figures on page 1500, which gave certain purchasing statistics. The sentence in which the error appeared read: "Purchases for the calendar year 1928 (exclusive of Connecticut

Company territory) amounted to \$348,979.26; issues, \$342,351.43; balance Dec. 31, 1928, \$66,302.50; per cent issued of total available, 8.37." The figures representing the "per cent issued of total available" should, of course, have been 83.7.

#### M. P. Stations in Texas to Sell Motor Coach Tickets

The Railroad Commission of Texas recently granted the application of the Missouri Pacific Transportation Company to sell motor coach tickets at the Missouri Pacific railroad stations in the state. The order also permits the motor coaches to pick up and discharge passengers at the railroad stations.

#### U. P. Opens Train-Motor Coach Station

The Union Pacific on May 15 opened a combination train and motor coach station at East Los Angeles, Cal. Passengers coming from the east and going to points in the Los Angeles suburban district, may now leave their trains at East Los Angeles and transfer to a motor coach on one of the three motor coach lines operated by the railway, which will take them to their suburban destinations.

#### Rio Grande Subsidiary Incorporated

The Rio Grande Transportation Company was recently incorporated under the laws of Colorado with incorporation papers revealing that 80 per cent of its stock is owned by the Denver & Rio Grande Western.

The new company, with headquarters at Denver, is expected to operate a freight truck line between Denver and Pueblo.

#### Extension Proposed

The Jefferson Highway Transportation Company, next in size to the Northland Transportation Company as a motor coach operator in Minnesota, is proposing to extend its lines to St. Louis, Mo. The company has applied to the Missouri Public Service Commission for permission to operate between the Iowa-Missouri state line and St. Louis, Mo., via Highway 61.

#### Reduced Tour Rates for B. & M. Employees

The Boston & Maine Transportation Company, according to a recent announcement, is offering special reduced rates to Boston & Maine employees and their families for personally-conducted all-expense motor coach tours during July. Each tour will extend over five days and is available to the employees and their families at \$49 or \$20 less than the regular rate established for the general public.

Since the charges for hotel accommodations, entrance fees, etc., cannot be reduced below the special tour rate, the reduction, it is explained, is in the charge for motor coach transportation over the 700-mile route. The itinerary of the



A Corner of the Machine Shop in the Providence, R. I., Garage of the New England Transportation Company

tour covers New England's seashore, mountain and lake regions with visits also to educational centers and points of historic interest.

### S. A. E. Summer Meeting

The summer meeting of the Society of Automotive Engineers was held at Saranac Inn, Upper Saranac Lake, N. Y., on June 25-28.

### Motor Coaches Replace Ferry

The Southern Pacific has substituted motor coach service, operated by its subsidiary, the Southern Pacific Motor Transport Company, between Vallejo Junction, Cal., and North Vallejo, in place of ferry service, which has been operated at a loss for a number of years.

### Union Pacific Operations

Eighteen new motor coaches have been purchased recently by Union Pacific Stages, Inc., and have been assigned to various parts of this company's highway transportation system. The company now operates 69 motor coaches over a total of approximately 1600 miles of highway, in Oregon, Washington, and western Idaho.

### Colorado Requires Additional Rear Light

An order requiring that every motor coach or truck operating under its supervision must use a reflector type of red light on the rear of the vehicle, in addition to the ordinary red tail-light now required by law, has been issued by the Colorado Public Utilities Commission.

### Safety Talk Series Inaugurated

Alfred H. Swayne, vice-president of the General Motors Corporation and first vice-president of the National Automobile Chamber of Commerce, delivered an address on "The Automobile and Safety" over a network of 33 radio stations on Saturday evening, June 15. This was one of a series of 13 radio addresses in the "Universal Safety Series."

### Cotton Belt Application Heard

The Arkansas Railroad Commission, on July 3, heard the application of the Southwestern Transportation Company, a subsidiary of the St. Louis Southwestern, for permission to operate a motor truck line between Nashville, Ark., and Murfreesboro, over highway No. 27, and between Murfreesboro and Delight, on highway No. 26.

### P. R. T. Extra Dividend

The Philadelphia Rapid Transit Company, on July 15, declared an extra dividend of \$1 a share on its common stock. The total disbursement will amount to \$600,000, an amount which, according to the announcement, was realized from the recent sale to the Pennsylvania Railroad of interests in P. R. T. motor coach operating subsidiaries.

### Los Angeles-San Francisco Sleepers

Motor coaches with sleeping accommodations, known as "Nite Coaches," were to be placed in service between Los Angeles, Cal., and San Francisco on June 26, by Pickwick Stages, Inc., a subsidiary of the Pacific Transportation Securities, Inc., in which the Southern Pacific has a large interest.

### Burlington-Missouri Pacific Union Station at Omaha

The Burlington Transportation Company and the Missouri Pacific Transportation Company will open a joint motor coach station about August 1 in the Peters Trust Building in Omaha, Neb. A two-year lease has been taken on this location, and station equipment is now being installed.

### Conference on Ohio Regulations

Motor coach operators in Ohio are to appoint a committee to confer with the Public Utilities Commission of Ohio on its proposal to form a new set of regulations governing motor coach operations within the state. At a recent conference, attended by a large delegation of representatives of motor coach lines, consideration was given to a tentative set of regulations which had been drawn up by the commission as a basis of discussion.

### Pennsylvania Local Consents in New Jersey Approved

The Board of Public Utility Commissioners of New Jersey recently granted the application of the Pennsylvania General Transit Company, highway subsidiary of the Pennsylvania, for approval of municipal consents to operate motor coaches between and including Stone Harbor and Sea Isle Junction, N. J.

The motor coaches were installed as a substitute for a train service operated by the West Jersey & Sea Shore.

### Colorado Checks Operators

Operators of motor truck lines in the state of Colorado must comply with the state laws governing such operations. The Colorado Public Utilities Commission recently summoned twelve operators to appear before the commission and explain why they had not obtained certificates of public convenience and necessity, as required under the state law. Other operators were ordered to submit reports on the amount of business they are doing, so that the commission may collect the fees which must be paid under the law.

### Motor Coach Replaces Rail Motor Car on D. & R. G. W.

Permission to substitute a motor coach operating on the highway, for a rail-motor car now running between Malta, Colo., and Leadville, was granted to the Denver & Rio Grande Western by the Colorado Public Utilities Commission on

July 3. It was stated that the rail-car operation involved a loss of \$10,000 annually, while the 12-passenger motor coach can be operated at a cost of only \$10 a day, with an investment of only \$6,400.

### Application of Independent Denied in Mississippi

The Mississippi Railroad Commission has denied the application of George H. Tobias and Associates, for authority to operate a network of 2500 miles of motor coach lines in the state of Mississippi. The proposed lines would have paralleled virtually every railway line in the state, and were vigorously opposed by the railroads as well as by existing motor coach operating companies in Mississippi. The commission held that public necessity for the proposed system had not been established.

### Application Denied N. J. Independent

The New Jersey Board of Public Utility Commissioners has denied the application of the Worth Motor Bus Corporation for permission to operate 35 additional motor coaches between Burlington, Camden and Philadelphia. The Board held that the present service between Burlington and Philadelphia is adequate. The Pennsylvania Railroad and the Public Service Co-ordinated Transport testified at the hearing as to the present adequacy of this Burlington-Philadelphia service.

### New Union Motor Coach Terminal at Norfolk, Va.

The Greyhound Lines, motor coach concern affiliated with the Pennsylvania, is one of the four companies whose motor coaches are now utilizing the new union motor coach terminal recently established at City Hall avenue and Randolph street, Norfolk, Va. The terminal operates under the name of the Union Bus Terminal, Inc., and, in addition to its utilization by the Greyhound Lines, will serve patrons of the Virginia Beach Bus Line, the Gray Line Motor Tours and the Peninsula Transit Corporation.

### German Railways Highway Services

Highway services of the German Federal Railroad Company were in operation over 89 routes on December 31, 1928, as compared with operations over 63 routes at the end of 1927, according to a recent report to the United States Department of Commerce. The route mileage is approximately 1400, including 46 passenger lines over 870 route miles.

This latter compares with 28 passenger routes at the close of 1927. Passengers carried increased in the same period from 1,500,000 to 2,200,000 while the motor coach mileage rose approximately 50 per cent.

Mileage run by freight trucks however, decreased about 10 per cent and freight carried 20 per cent from the previous year.



This is attributed to the fact that in 1927 a number of freight vehicles were operated over the highway on an emergency basis during the floods in the Elzebirge region of Saxony.

### Contract for Cotton Belt Shops Awarded

The Southwestern Transportation Company, highway subsidiary of the St. Louis Southwestern, recently awarded contracts to Campbell and White, Tyler, Tex., and to Bailey, Burns & Fitzpatrick, Dallas, Tex., for the construction of shop facilities at Texarkana, Tex.

Construction of these shop buildings is expected to cost approximately \$72,000 while an additional investment in shop equipment of between \$50,000 and \$60,000 is contemplated. With the completion of the facilities the general offices of the company will be moved to Texarkana.

### Plans Co-Ordinated Service With N. Y., W. & B.

Co-ordinated motor coach service with the railway service of the New York, Westchester & Boston is planned by the County Transportation Company which has petitioned the New York Public Service Commission for authority to take over certificates now held by the Port Chester-Glenville Bus Company.

According to the petition, upon which the Commission will hold a public hearing, the County Company now owns and operates 60 motor coaches which it plans to assign to various routes in co-ordination with New York, Westchester & Boston trains.

### Pennsylvania and Reading Get Philadelphia-Reading Permits

The Pennsylvania General Transit Company and the Reading Transportation Company have been granted certificates by the Public Service Commission of Pennsylvania for the operation of motor coach lines from Philadelphia to Reading and Pottsville, Pa. The Pennsylvania certificate permits operation between Philadelphia and Reading while permission to run from Philadelphia through Reading to Pottsville was granted to the Reading. Both companies are prohibited by the order from conducting local business in competition with existing local carriers.

### Pennsylvania Proposes Coach Operation in Ohio

The Pennsylvania General Transit Company, motor coach-operating subsidiary of the Pennsylvania, which recently proposed motor coach service across Ohio, paralleling its Fort Wayne division, has also filed with the Ohio Public Utilities Commission, an application for permission to operate motor coaches parallel to its Panhandle Division in Ohio.

Entering Ohio at Steubenville, this coach line would pass through Newark, Columbus, Jefferson, Urbana, Greenville and New Paris, with a second route branching off at West Jefferson and running west to the Indiana line through Springfield, Brandt, Dayton and Eaton. The general transit company proposes to use seven 29-passenger parlor type motor coaches on this route.

The first Ohio application of the Pennsylvania General Transit Company proposed a motor coach line running from East Palestine and Salem, through Alliance, Canton, Massillon, Upper Sandusky, and Lima, to the Indiana state line. Both these lines would connect at the Ohio-Pennsylvania state line with the motor coach service of the general transit company in Pennsylvania.

### British Road Extends Highway Services

The London & North Eastern of Great Britain has recently placed in service 46 new motor coaches on a route between Sunderland, Durham County, and Newcastle-on-Tyne, England, according to recent reports made public by the United States Department of Commerce. The report also states that the road is considering the inauguration of a combination train-motor coach passenger tariff which will permit patrons to change from trains to motor coaches as they desire.

In addition the L. N. E. has extended its freight trucking service in the Yorkshire, Durham and Northumberland areas for the purpose of expediting the service and reducing handling costs.

### Reading Expands Its Service

The Reading Transportation Company is now providing an hourly motor coach service in either direction on its route between Philadelphia and Atlantic City, at which latter point connecting coaches operate southward along the shore to Ocean City, Wildwood and Cape May.

The Transportation Company's terminals in both Philadelphia and Atlantic

### THROUGH MOTORCOACH SERVICE

Philadelphia-Atlantic City-Ocean City Line  
Atlantic City-Ocean City-Wildwood-Cape May Line

### RAILROAD-MOTORCOACH SERVICE

Train connections in Atlantic City

SOUTHBOUND—WEEKDAYS AND SUNDAYS (except as noted)

TABLE 1 (Daylight Saving Time)		357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391
Philadelphia	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM
Atlantic City	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM
Ocean City	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM
Wildwood	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM
Cape May	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM
Atlantic City	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM
Ocean City	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM
Wildwood	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM
Cape May	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM

NOTICE:—All forms of railroad tickets between Philadelphia and Ocean City are accepted on trains between Philadelphia and Atlantic City. Motorcoach fare additional between Atlantic City and Ocean City, one-way, 10c; round trip, 15c.

a—On Sundays, and Holidays July 4 and September 2, leave Chestnut and South Street Ferries 5:00 P. M.

b—Reservation Train, Sundays only.

c—Connection not available on Sundays, and Holidays July 4 and September 2.

R—Seat reservation service only Philadelphia to Atlantic City and Ocean City. (See section 3, General Information.) No seat reservations between other points.

w—Weekdays only.

s—Sundays only.

\*—Batterman Road and Ocean Avenue.



Reading Coach Loading at Atlantic City

City are the parent railroad company's stations and the close co-ordination of the rail and motor coach services is known in the reproduction herewith of the joint rail-motor coach public timetable schedules (eastbound). The scheduled time between terminals, it will be noted, is 2 hr. 45 min. by motor coach as compared with a minimum of 1 hr. 7 min. by train.

Seat reservations are made by the purchase of tickets between Philadelphia and Atlantic City or Ocean City in either direction. The rate charged between Philadelphia and Atlantic City is \$1.50 one-way and \$2.50 for the round-trip. No reduction is made in favor of children who occupy seats. Provision is made for seat reservation by telephone, such reservations being held until 15 min. before the scheduled departure of the motor coach.

The coaches used on the Philadelphia-Atlantic City service are the latest design

of 6-cylinder Macks equipped with a "club parlor" body built to the Transportation Company's specifications. These coaches have full headroom and ample inside accommodations for the handling of hand baggage. There are 29 passengers' seats in a 33-seat body, making for roominess between seats. The seats over the rear wheel housing face the cross seat at the rear. Two card tables are provided, with four places each. The coaches are of the observation type—with a maximum of window space at the rear. The seats have linen head rest covers, each bearing the Reading's triangular monogram.

The company has secured authorization from the Public Service Commission of Pennsylvania for operation over two additional routes—Philadelphia-Pottsville and Harrisburg-Reading, paralleling lines of the parent railroad. It has nine additional motor coaches under order, as noted elsewhere in these columns.



Interior of Reading Club Parlor Coach, Used in Philadelphia-Atlantic City Service

### Livestock Moving by Motor Truck

Forty per cent of all the livestock which enters the plant of the Iowa Packing Company in Des Moines, Iowa, is brought directly to the plant from farms by motor truck, according to H. J. Nelson, manager of the company. The use of motor truck transportation in marketing livestock has nearly doubled during the last two years, according to Mr. Nelson.

In 1926, from 25 to 30 per cent of the livestock was brought to market by motor truck. In 1928, the proportion had increased to 40 per cent, and approximately 4,000 farmers residing within 60 miles of Des Moines are now using motor trucks exclusively in carrying their cattle to the packing plant. While the marketing area is now more or less limited to a radius of approximately 60 miles from Des Moines, it is the opinion of Mr. Nelson that this radius will be extended to 100 miles or more, with the completion of all-weather roads.

### Motor Coach Safety

The National Motor Bus Division of the American Automobile Association has issued a booklet, entitled "The Motor Bus—Our Safest Highway Vehicle," in which motor coach accidents in eight states and the District of Columbia during 1928 are compared statistically with mishaps to private automobiles.

This study finds that motor coaches, during the year under review, were involved in less than one per cent of recorded accidents in the territory included, that only 1½ motor coach accidents were recorded per million vehicle miles and only ¼ accident per million motor coach passenger miles.

A total of 167,717 accidents were recorded as involving private passenger automobiles, commercial vehicles, taxicabs, and motor coaches. Of this total 1,599 were accidents involving motor coaches. This is equivalent to 0.95 per cent of the total whereas private passenger automobiles were involved in 124,800 of the recorded accidents or 74.41 per cent of the total. Thus the conclusion is reached that the motor coach is seven times as safe as the private automobile.

Fatalities were involved in 4,762 of the accidents. Of these motor coaches figured in 76 or about 1½ per cent while private automobiles figured in 3,508 or almost 74 per cent.

For comparison on a mileage basis it is assumed that the average private car in the territory surveyed traveled about 6,000 miles during 1928, while the average motor coach traveled 38,000 miles. Computations from these assumptions indicate that motor coach accidents recorded were equivalent to 1.509 per million vehicle miles whereas those involving private automobiles were equivalent to 3.414 per million vehicle miles.

The computation is next made on the passenger mile basis in which case it was found that motor coach accidents per million passenger miles amounted to 0.251. Private automobile accidents fig-



ured on the same basis amounted to 1.707.

The study states that in comparison with other vehicles the motor coach in the reporting states was superseded in safety by the taxicab alone. This latter, however, the study points out, is not functionally a highway vehicle.

### Rail and Highway Co-ordination on L. N. E. of Britain

Co-ordination of rail and highway passenger services throughout the greater part of the territory served by the London & North Eastern of Great Britain will result from the recent agreement whereby this railroad will control the United Automobile Services, Ltd., jointly with Tillings & British Automobile Traction, Ltd., according to a recent announcement in *Modern Transport* (London).

The L. N. E. and Tillings & British Automobile Traction, Ltd., had been bidding for the United in competition but finally reached an agreement for the joint control to be effected through the formation of a holding company. The United operates motor coaches over some 2,000 route miles in the Eastern section of England from Suffolk to Northumberland, including several long distance runs. Thus, the announcement points out, the L. N. E., with Tillings & B. A. T., will control practically all highway passenger services on the east coast of England from Berwick to London.

It is anticipated that the companies involved in the new grouping will continue to operate under their existing organizations; that a combined total of 2,000 motor coaches will be in the service and that the entire Tillings & B. A. T. interests will soon be affiliated with the L. N. E.

Meanwhile, the announcement further states, important developments are pending in Scotland where negotiations are understood to be pending between the L. N. E. and the London, Midland & Scottish, on the one hand, and the Scottish Motor Traction Company, highway operating concern, on the other, for the joint acquisition of the latter's motor coach properties by the railways. It is estimated that more than £1,000,000 (\$4,870,000) will be involved in this transaction.

### Latest Missouri Pacific Motor Coach Time-Table

The latest edition of the Missouri Pacific Transportation Company time-table was issued on June 9. It is of the same style as are railroad time-tables with stations served by the motor coaches are indexed alphabetically and 17 points where motor coach terminals have been established listed. The index to motor coach lines lists 25 routes extending over 2812 route miles. A map of Missouri Pacific highway lines is also included as well as a declaration of the purposes and policies of the Missouri Pacific Transportation Company. This latter says in part: "Establishment of a comprehensive and dependable highway transportation system, supplementing the service of the Missouri Pacific Lines, is the purpose of the Missouri Pacific Transportation Com-

pany, a subsidiary of the Missouri Pacific Railroad Company. It is the firm belief of the officers of these two companies that good transportation service is of the first importance in upbuilding the Nation,



Cover Design of the Time-table

and, particularly, the territory served by the Missouri Pacific Lines.

"This time-table has been prepared with a view to acquainting the traveling public with the frequent local motor coach service provided and the practicability of using this service to or from convenient points for connection with fast, through trains."

### Orders for Equipment

THE MOTOR TRANSIT MANAGEMENT CORPORATION has accepted delivery of three ACF 29-passenger full headroom parlor type motor coaches.

THE ATLANTIC CITY & SHORE RAILROAD has accepted delivery of five Type Z 29-passenger Yellow coaches.

THE CENTRAL TRANSPORTATION COMPANY, a subsidiary of the Illinois Central, has accepted delivery of a Type Y Yellow parlor coach.

TEN TYPE W YELLOW OBSERVATION COACHES have been delivered to the Burlington Transportation Company by the General Motors Truck Company.

THE READING TRANSPORTATION COMPANY has ordered four Z-240 Yellow coaches with parlor car bodies and five Mack club parlor coaches.

THE MISSOURI PACIFIC TRANSPORTATION COMPANY has accepted delivery of ten Type W observation parlor coaches, and one Type Y Yellow parlor coach, from the General Motors Truck Company.

THE MOTOR TRANSIT MANAGEMENT COMPANY, operating the Greyhound Lines, in which the Pennsylvania has an interest, has accepted delivery of three Type W Yellow observation coaches from the General Motors Truck Company.

### Motor Transport Officers

R. K. Stackhouse, general superintendent of stations and transfers of the Pennsylvania, has been elected chairman of the Motor Truck Section of the Motor Transport Division, A. R. A., succeeding G. C. Woodruff who recently resigned as assistant freight traffic manager of the New York Central to become chairman of the U. S. Freight Company. Mr. Stackhouse, formerly an elective member of the Division's general committee, now succeeds to Mr. Woodruff's ex-officio membership and Frank C. Jerome, general freight agent of the New York Central has been chosen to fill the elective vacancy thus caused on the general committee. Mr. Jerome, as announced in the *Motor Transport Section* of June 22, page 1542, has taken over the direction of New York Central trucking activities formerly supervised by Mr. Woodruff.

### Among the Manufacturers

W. T. Doyle has been appointed representative of the AC Spark Plug Company for the territory embracing eastern Pennsylvania and New York State. Mr. Doyle formerly represented this company in New York State as a dealer salesman.

Ernest D. Grinnell, assistant traffic manager of the Buick Motor Company, has been appointed traffic manager to succeed George C. Conn, resigned. Mr. Grinnell has been connected with the Buick traffic department for the past 12 years and had been assistant traffic manager since 1923.

The Bender Body Company, Cleveland, Ohio, has under construction an addition to its present plant which, when completed, will increase the plant's production capacity 30 per cent. A new structure, 163 ft. by 100 ft., to be used as an assembly plant, is included in the project as well as a 150 ft. by 80 ft. addition to the present building. This latter will be used as a paint shop and will be equipped with the latest type spray booths and other modern body finishing facilities.